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ROBIN ADAIR

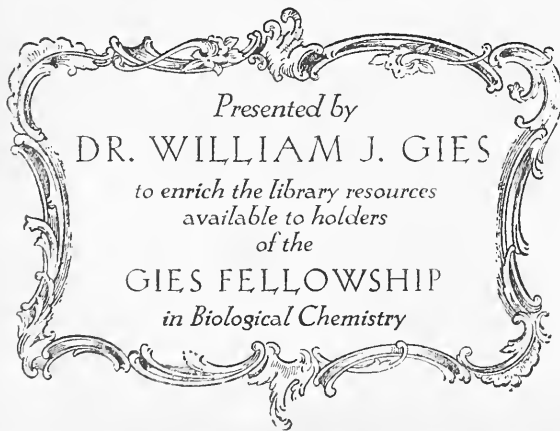
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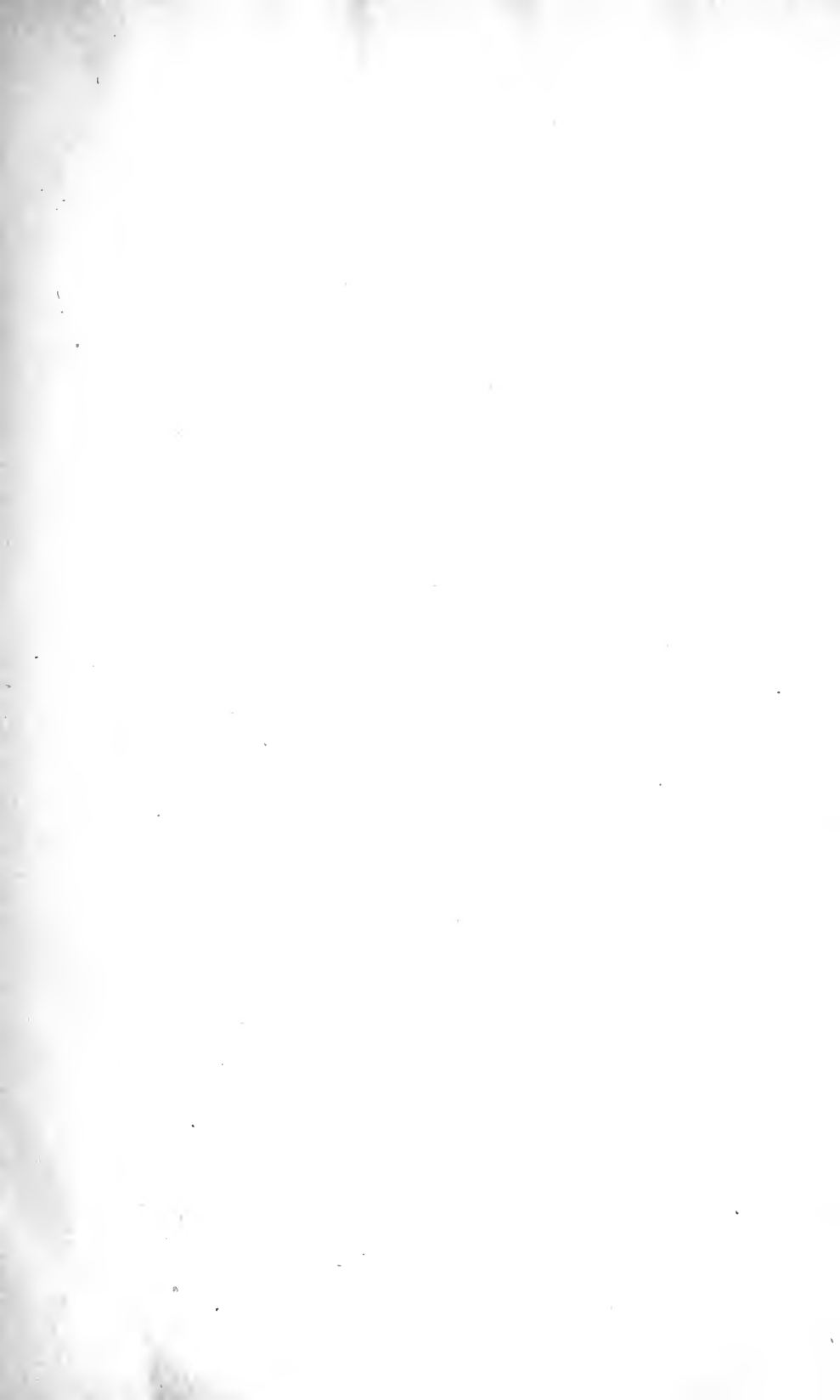
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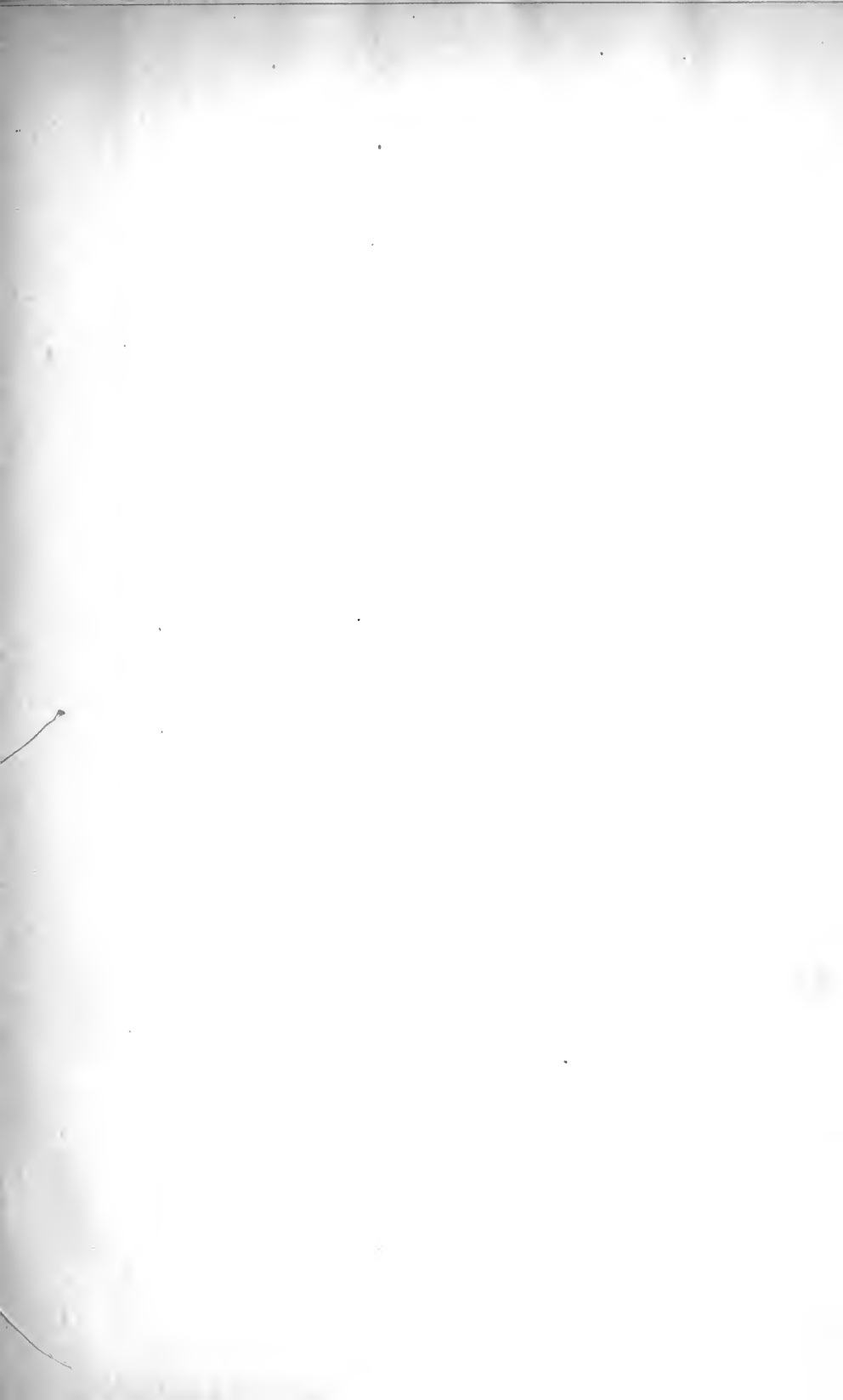
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PRACTICAL  
ORAL HYGIENE,  
PROPHYLAXIS  
AND  
PYORRHEA ALVEOLARIS

BY

ROBIN ADAIR. B. S., M. D., D. D. S.

PROFESSOR OF ORAL PROPHYLAXIS AND PYORRHEA ALVEOLARIS, SOUTHERN  
DENTAL COLLEGE, ATLANTA, GA.; ORAL SURGEON, GRADY HOSPITAL  
(1910-1912); MEMBER FULTON COUNTY MEDICAL SOCIETY,  
GEORGIA STATE MEDICAL SOCIETY, GEORGIA STATE  
DENTAL SOCIETY, NATIONAL DENTAL  
SOCIETY.

1914  
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ATLANTA, GA.

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Ad 1

TO  
HIS FATHER

who for forty-five years of active practice  
has advocated the principles of Oral Hygiene  
and whose highest aspirations have been  
for his son to further the cause

THIS WORK  
is lovingly dedicated by  
THE AUTHOR



## P R E F A C E .

This book is written for those dentists who desire practical information on the subjects of oral hygiene, prophylaxis, and pyorrhea alveolaris.

The first section is devoted to the great forward movement of oral hygiene. Here are given methods and forms for dental inspection of school children, and a collection of carefully selected lectures furnishing the proper material for those called upon to deliver popular talks before school children and women's clubs. The author has found that diagrammatic pictures often prove the most convincing way to teach the facts of oral hygiene to a patient. This section contains illustrations which may be shown and explained to a patient while in the dental chair.

The second section contains practical information concerning the most efficient methods to conduct prophylaxis in a dental practice, and names the materials to use for such work. The training of female assistants and the dental nurse question are treated in a most practical manner.

The third section is a comprehensive description of pyorrhea alveolaris. Here is described in detail the methods of treatment now prominent before the dental profession. The business phase of the question, so seldom mentioned in discussion or literature, is presented in a frank manner. The medical profession is now greatly interested in the question of "oral sepsis." To meet this advance, the author devotes a chapter to their interests.

I have frequently been asked questions on the above subjects. The articles I have written for dental journals have elicited numerous requests for further information, and I have become convinced that there is need of a book dealing with such matters in a thoroughly practical manner.

I have endeavored to familiarize myself with the methods of other specialists in this line of work, and, from time to time, have visited them in their offices in order to inspect their work, and discuss with them the methods used. A number of these men have been quoted, and, in some instances, they have prepared descriptions of certain parts of their work for publication in this book.

I am fully aware that I have not always observed the proper literary obligations; for my accumulation of material collected for dental college lectures, with no idea of future publication, has come from a store of thoughts of many writers in common.

“What he thought he might require,  
He went and took.”

All sources of information on these special subjects have been freely drawn on, and wherever possible, credit has been given for any matter used.

ATLANTA, GEORGIA,  
February 1, 1914.

## MY LITERARY OBLIGATION.

Below I give the names of those dentists and physicians who have written contributions especially for this work; and a partial list of those whose methods and writings have been quoted:

Adair, R. B.	Hartzell, T. B.
Black, G. V.	Jenkins, N. S.
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THE AUTHOR.

319 Grant Bldg., Atlanta, Ga.





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# PART I.

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PRACTICAL ORAL HYGIENE





## CHAPTER I.

### ORAL HYGIENE MOVEMENT.

PROGRESS MADE AND PREDICTION FOR THE FUTURE.—IN  
LITERARY COLLEGES.—PERSONAL ORAL HYGIENE  
FOR DENTISTS.

Only in recent years have some of the more progressive dentists begun to realize their duty to the public in the matter of educating them on the importance of prophylactic and oral hygienic measures in the care of their teeth, and to teach them the great results which can thus be secured in the way of increased health, happiness, and freedom from disease. This propaganda has been termed the Oral Hygiene Movement.

It must be admitted that the slowness of the dentists in realizing their duty along this line has been discouraging to those who have had the interest of the movement at heart, but we all know that the dental profession is a busy and hard working profession, having strenuous requirements on its time and resources. Still the time cannot be far distant when the dentists of America will realize their great opportunity as well as their duty along the line of educating the people. It will mean the placing of the propaganda on a higher plane of usefulness and the accomplishment of results in every way equal to the best work done in recent years by the medical profession in the line of preventive measures.

It can already be noticed that the dentists of this country who are interesting themselves in this movement are taking the places at the head of the profession, and are reaping just rewards for their work in furthering the public welfare.

It has been stated that only twelve per cent. of any community pays any attention to the teeth, but, since

we know how inefficient most of this care is, we realize that a very much smaller percentage practices oral hygiene in a really efficient manner.

It is somewhat a reflection on the dental profession that a layman, Mr. Horace Fletcher, did more in a few years to acquaint the people with oral hygiene facts than did the whole dental profession in its former career.

The public is beginning to be aroused on the subject of oral hygiene and they read eagerly the magazine and daily newspaper articles on the subject. The whole trouble to-day is that just such trustworthy (?) facts are given them as are to be found in the columns, "Advice to the Lovelorn," and "How to Remove Freckles."

Not all dentists are in possession of facts relating to the general health and welfare, which if properly presented to the laity, would soon make the advice of the dentists as much sought after as is that of the medical man. The truth is that up to the present time, the laity and the medical profession have been ignorant on this subject, and for the simple reason that the dentists themselves have not done their duty in the way of educational propaganda.

One reason for the lack of knowledge on the part of the public is shown by the following quotations taken from a common school physiology:

"The teeth are bony keys set in the jaw-bones. Those in the front part of the jaw are sharp, so as to bite lumps of food. Those in the back part of the mouth are flat, so as to grind food to pieces. Between the ages of 6 and 13 the child loses its first teeth and gets a whole new set, and 8 additional ones. Biting hard things, such as nuts and wood, often breaks the enamel and causes the teeth to decay. When the decay reaches the nerve, the tooth aches and becomes very tender."

These false impressions, gained at an early age, are very hard to overcome when the children grow older. We should bend our energies to correct this state of

affairs by establishing in our schools a brief but thoroughly scientific course on these subjects.

Not only does the proper dental attention give the owner the means whereby he can more comfortably masticate his food, but also serves as a preventive against those agents which make against his general physical welfare. The lack of this attention not only causes a filthy condition, which furnishes the bed where germs can readily grow, but also lowers the patient's resistance, and this results in physical deterioration.

A few years ago this fact was not generally recognized, but to-day the army and navy, the big factories, and even the base ball clubs often employ a good dentist for the purpose of protecting their employees.

The match factories were the first to recognize the benefits of protecting their employees against mouth infections. Previous to dental inspection and care, phosphor-necrosis was a dreaded and common affliction among those thus employed. Since the employment of a regular dentist, this condition has been reduced to a rarity.

Morris and Co., one of the big stock yard firms of Chicago, have just installed a fully equipped dental office for the purpose of giving their thousands of employees free dental attention. This firm was convinced that the health of its workers would be better, and that a great saving of time would result from having a dentist close at hand. This special inducement to these people saves many teeth which would otherwise be lost.

This is in line with the efforts of many of the larger corporations to guard against any thing which would incapacitate the employees from giving good service. Undoubtedly, bad teeth are the greatest cause for loss of time, and these free clinics will, in time, be a regular equipment.

Many of the larger southern cotton mills either employ a dentist for their employees, or make it to his

interest to locate in the vicinity by giving him free rent or by other means.

One mill in the Piedmont district, which owns the township, selected a well equipped young dentist and gave him free rent, assured him the influence of the officials in his oral hygienic endeavors, and guaranteed him freedom from competition by the more or less conscienceless dentists who often infest such places. He is free to give these mill operatives much valuable advice and treatment, and in turn, they furnish their employers better work.

One not familiar with the ignorances and prejudices existing among these cotton mill operatives, cannot imagine the difficulties to be met with in trying to make better their conditions. Not long since, I was in the township mentioned and questioned some of these people about their teeth. I was congratulating them on having such a good dentist as Dr. ————. One of them said, "Dr. ———— may be a very good fellow, but I am not going to let him work for me or my family any more, for," said he, "I had the dickens of a toothache and went up to him to get it pulled and he commenced some rot about cleaning teeth and saving my tooth. I didn't have any time for such stuff, and went to Greenville and got Doc. ———— to pull it. Dr. ———— used to pull teeth, but he has got to talkin so much about clean mouths that he is losing some of his trade."

While the contemplation of such a clientele is not pleasant, it emphasizes more than ever the need of education on these subjects.

If we have any patients who control mills, it is our duty to show them the benefits of such service, and suggest some good young dentist for the position.

To "some good young dentist" the suggestion is offered that he see some mill official with whom he is acquainted, and show him the immense advantages to be derived from having the right sort of dentist connected with the mill. The experience is well worth while,

the good done incalculable, and the financial returns are generally satisfactory if the co-operation of the officials is secured.

At the present time where wages are high and hours short, officials who control large numbers of operatives are rapidly awakening to the advantages of measures which will enable them to secure more efficient services from their employees. As regards medical advice they are always ready to have lectures on sanitation, and the suggestions of the resident physician are most readily carried out.

Marshall, in his "Mouth Hygiene," calls attention to the fact that practically no one escapes the diseases of the mouth, and that dental decay is, without doubt, the most common disease that afflicts the human family. He further states that in his practice of about forty years, he has not seen but about four instances where persons had reached mature life without some form of dental decay.

If we could only realize that the condition of faulty mouths keeps our young men out from even such employment as the Army and Navy, and that so few are able to pass the simple requirements, we might wake up on this subject. Even more so, when considered that, had the oral hygiene movement started back when these applicants were children, they would not be hampered in this way. In our Philippine Army thirty-five per cent. of the catarrhal dysentery is said to be traceable to septic mouth conditions.

Thousands of applicants for our Army and Navy are rejected because of faulty teeth. Not only is this true in our Army, but in England also, it has been said that five hundred were rejected in one year because of improper oral conditions. Further than this, a report states that twenty-four per cent. of the English Army recruits have useless teeth. At Anapolis an average of only two per cent. of the men who apply for entrance pass without first having some dental work done.

Germany has recognized that the great efficiency in her army is maintained by attention to oral hygiene. The present requirement is that each soldier shall brush his teeth at least once a day, and the first sergeant in each company must see that this order is carried out. Many other countries have taken steps along this line in regard to the armies. While America will probably never exercise this parental care, still we are bordering on this, for in the Philippine Army the soldiers are required to have monthly examinations of their mouths by the Post Surgeons.

The American Army and Navy employ the best of dentists, who secure their positions, not through any politics or favoritisms, but by standing the hardest kind of examination. These men not only do repair work for the soldiers, but they, working with the medical authorities, see that their mouths are kept clean. It is a remarkable story that the Surgeon General was willing to raise the dental requirements for admission into the Army and Navy, yet, when the raise was attempted, it was found that the number of recruits was so reduced that the old standard had to be again accepted.

Undoubtedly, more and better oral hygiene will be taught and required each year in our Army, and the officials in charge will find that greater efficiency, better health, and a better fighting force can be maintained by having the men keep their mouths in a clean condition.

The prediction can be made that the day is not far distant when our department stores and other business houses where the clerks come in contact with customers, will provide either by pamphlet, lecture, or by furnishing free prophylaxis, the necessary means for insuring a healthy condition of their employees' mouths, and it will certainly more than repay them for the time and money expended. We know that when a clerk with unkept teeth, shining crowns, and bad breath waits on us, it makes a difference. It also makes for a sale, if the

clerk has a pretty well kept mouth. Here is a fertile field for the oral hygiene worker; this class of people cannot pay for expert services. It costs too much and the loss of time is also an item. They are often the victims of dental parlors where their teeth are fitted with golden trappings which shine out as the headlights on an automobile.

## ORAL HYGIENE FOR LITERARY COLLEGES.

One of the largest and best military schools for boys is located some ten miles from Atlanta. The attendance is gathered from all over the United States, and many foreign countries are represented. I have had the pleasure of having many of these boys for patients. Almost without exception, they have presented mouths needing much attention, especially for oral sepsis. I have counted up the time lost by these boys going to and from the dentist, and the loss of study-time due to pain which I believe will show far greater than any other cause. The president realizes this condition and will in time accept the plans suggested.

The same condition prevails at our educational institutions situated in all our cities. While the dental inspection of our public schools is productive of much good, it is undeniably true that we are neglecting just as great a field in the colleges. These institutions are filled with young ladies and gentlemen who are to be the future parents and who can be made our earliest and best missionaries. At this age, fourteen to twenty-two, they are very receptive to suggestions on oral hygiene. Not only owing to their ignorance of their mouth conditions, but also the great loss of time for the necessary dental attention, they delay until too late. Even those who endeavor to have their teeth looked after are sometimes recommended to the poor operators. I have known of several cases where inferior dentists have secured some of the teachers in a school for patients, and have

done their work free of charge with the understanding that the teachers solicit work for them among the students. In one of these instances, the college officials were unable to overcome a teacher's persuasive powers with the students, and the latter were led to patronize a man who was about on a par with those employed to work in dental parlors. This happened in a large institution. How much better it would have been for the president to have had on his staff, a reputable dentist to reside in or near the college, or to have a city dentist to come to the college on regular days, and have a well equipped dental office in the college building. Think of the better service and the saving of time and trouble to the teachers and students. Every institution can afford a well equipped hospital, whereas the cost of a dental office need not be nearly so much as that of the hospital.

Some years ago, I accepted an invitation to deliver a lecture on the subject of "Teeth," at one of our larger female colleges. One of the local dentists got interested, worked up some enthusiasm, arranged the date, secured a lantern, and introduced me. My whole theme was turned to what benefits they could secure by a course on "Oral Hygiene." I made this lecture as dignified and impressive as study and slides could do. The president and the dentists followed up the suggestions, and now, for several years, this institution has been giving the students a regular and systematic course by a professor in oral hygiene. There is a possibility that spasmodic lectures may do some good, but if the work is carried out in the regular curriculum, as in the college just mentioned, great good can be accomplished.

#### PERSONAL ORAL HYGIENE FOR DENTISTS.

If you want to kill an oral hygiene movement, just let a dentist with a dirty, filthy mouth and foul breath lecture to the parents or examine the children's mouths. The President of a Dental Society, if he has the interest



of the movement at heart, will select men with mouths in good condition to do this work. To show the inconsistency of the position, one of the greatest lecturers in this work, carries around with him a mouth that is extremely foul. Others, in just as bad condition, are doing the same work all over the country. Dentists must look after their own mouths first, if they desire their words to have any weight with the people. One of the greatest drawbacks in our work along the line of oral hygiene, is, undoubtedly, the existing conditions of some dentists' mouths. A few years ago, I made an examination of some twenty dentists' mouths which reflects the average to be found anywhere. The author is so ashamed of the result that he declined to publish the table.

To those dentists who think only the patient needs oral hygiene training, let them examine the mouths of a few of their brethren at any dental convention. The editor of the *Dental Dispensary Record* has well said "that the weakest link in the whole mouth hygiene movement is the dentist himself."

## CHAPTER II.

### ORAL HYGIENE FROM INFANCY.

SOME FUNDAMENTAL OBSERVATIONS.—SIXTH YEAR MOLARS.—  
MASTICATION OF FOOD.—THE NEGLECTED MOUTH.

Oral hygiene for the infant should start at its birth, and be maintained by the trained nurse until the child is turned over to the regular nurse and the mother, who in turn, should be taught to carry out our instructions for keeping the mouth in a cleanly condition. Milk, whether from the mother's breast or the cow, readily ferments in an exposed warm place, such as the child's mouth.

If properly done, nothing but good can result from washing a baby's mouth. The manner of doing this is one of the simplest things, and yet, in my college work, after lecturing on the subject, I have found that few students remembered it at the time of their final examinations. The first requisite is clean hands. Around the index finger is wrapped a small amount of aseptic cotton; the cotton is then saturated with a solution of boric acid. The child is held in the arms with the head slightly back, and, as most children when held in this position open their mouths, the finger can be inserted easily. The part of the mouth which needs the most attention is not the top of the gum surface, as many seem to think, but under the tongue, and at the lower surfaces on the buccal sides of the cheek in places where milk remains. Do not use gauze on the finger as it is entirely too rough. Rubbing is not necessary, but the simple cleansing by removing the milk debris is the proper idea. The best time for this is after the morning bath and the procedure may be repeated at night with good results.

When the child is about nine months old, the same method is used, and, in addition, care should be exercised in wiping around whatever teeth have erupted at this

time. About the tenth month, it is well to secure a soft camel's hair brush, one in which the hairs do not shed, and very carefully brush the teeth from the gums with a rotary motion, using a brush which has been dipped in boric acid solution. At this age, the child will not object to it, and it should be done more in a spirit of play by the mother herself. Now, too, the child will enjoy the friction of the brush upon the gums. The gums can now be brushed and a small amount of massage given. This will stimulate the growth of the teeth and prove to be a great aid towards their eruption. If the spirit of play in this brushing is carried out, the child early learns to brush its own teeth, and, if kept up, the tooth brush habit will be so instilled into the child's mind that much pain and decayed teeth will be prevented for the future man or woman.

## SIXTH YEAR MOLARS.

Dr. Woodbury, of Boston, calls the sixth year molars the "working tools of mastication. Their work begins at once and lasts throughout life; upon them rest full growth and development; upon them depends good health during life." If this is true, we have the key note for a great deal of dental irregularities due to mal-occlusion, food pockets, contracted jaws, and also a great many pathological conditions. One has only to examine the mouths of a moderate number of subjects to be astonished at the early removal of one or more of these sixth year molars. As these teeth come out just back of the temporary teeth, the parent is careless about the child brushing them properly, and thinking that they, too, are temporary teeth to be soon shed. They are generally covered with a mass of sticky food which furnishes nutriment for germs of decay.

In examinations which I have made at the "Home for the Friendless," of children from six to fifteen years of age, in our city hospitals, and among students of the dental colleges, there is one defect more than all others,

and that is this condition of loss of the sixth year molars, especially in the lower jaw. If it were only the simple loss of the tooth, it would not be so bad, but nature, attempting to close up this space, tilts the next four or five teeth, causing them to get so far out of place that the proper mastication of food is impossible.

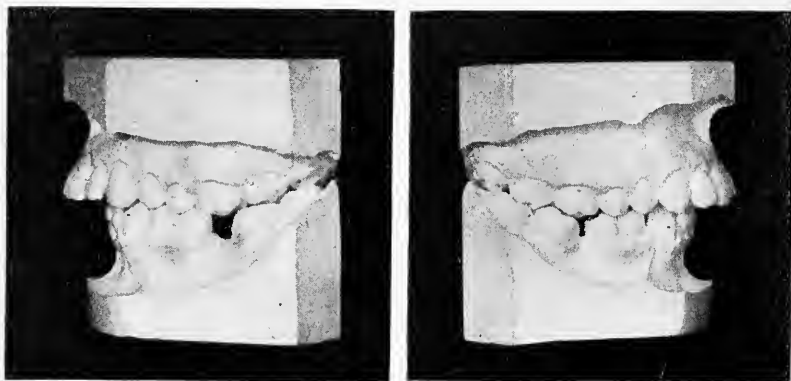


FIG. 1. MODELS OF A YOUNG LADY 21 YEARS OF AGE, SHOWING IRREGULARITY CAUSED BY THE EARLY LOSS OF THE SIXTH YEAR MOLARS.  
(Case of Dr. C. C. Howard.)

It should be the duty of all teachers of oral hygiene to show on their screens pictures illustrating the result of this condition or to draw them on the blackboard.

Dr. Potter, in an article published by the "Dental Hygiene Council," of Massachusetts, says, in reference to the statistics which he reported in Brookline, Mass., "The sixth year molar has aptly been styled by Dr. Bogue, the principal molar of man. All will, I believe, agree with this designation. If the tooth is in large measure or wholly destroyed, the efficiency of the teeth, as masticating powers, is largely lost. In 345 pupils, from eleven to fourteen years of age, 18 per cent. had lost both crowns of the lower sixth year molars, and 24 per cent. had lost one crown of a lower sixth year molar. In the same number of pupils at the same age,

6.9 per cent. had lost both crowns of their upper sixth year molars, and 13 per cent. had lost one crown of their upper sixth year molars."

The best remedy is that described under "Technique of Prophylaxis," which is the covering of this tooth as soon as it erupts, but, as comparatively few people to whom we talk will be receiving regular prophylaxis care from a dentist, we should in all our lectures particularly stress the brushing of this tooth.

#### MASTICATION OF FOOD.

In our former races, not only the skulls of adults, but of children as well, exhibit a smaller number of caries than we are accustomed to find to-day. This is undoubtedly due to the fact that they had coarse food to chew, for the cusps of the museum specimens are worn nearly to the pulp. Such a thing in children to-day would be a dental rarity. Thus, we must conclude that it is the duty of the dentist to acquaint their patients with these facts, and instruct them always to provide their tables with some food which will require very thorough mastication. While such teaching may not at first be very popular, there are many of our good patients who would undoubtedly put this into practice if acquainted with the beneficial results which would surely ensue.

It is unfortunate that the temporary teeth of our children, just at the stage when thorough mastication is of greatest importance, are allowed to decay to such an extent that it becomes a painful operation for the child to masticate food at all. It is at the age of eight or twelve that the greatest developments should take place, but the examination of school children has shown that a large majority of them are dental cripples. It is time the dental profession is waking up to its opportunity and duty, and trying in some way to instil into the minds of, not only their patients, but also the people at large, these important facts about the care of the teeth and

the prevention of disease. Instead of pies and soft foods, the children should be taught to eat the food which requires thorough mastication. I am always telling my students that the tough meat at the boarding houses is one of the greatest Godsend which they have, if they will only take advantage of it, and learn to thoroughly masticate their food. I have been told that some of them found a certain amount of consolation in the experiment.

Nature furnished man's jaw with a series of muscles strongly attached to the jaw bones, in order that the food may be given the proper amount of mastication. The muscles in this position are subject to the same laws of development and increase of power through exercise as the muscles in other parts of the body. It is a fact which can be easily demonstrated that the person who chews well has a much larger set of muscles than the person who chews but little.

It having been shown heretofore that primitive man's immunity to decay was due to the perfect mastication of his food. The one factor in our future work on prophylaxis which must be stressed more than heretofore, is the use of our jaws. Dr. G. B. Black, in his book on "Operative Dentistry," has an instrument, the Gnathodynameter, by which the force of the ordinary bite may be measured. This has been found equaled to three hundred pounds. Nature certainly intended us to make use of this tremendous power with which we are supplied. However, we are, unfortunately, not given this opportunity often, for our housewives would feel chagrined if there appeared upon our tables anything which would necessitate any large amount of chewing before it is swallowed. The whole idea of cooks seems to be to eliminate anything which requires much mastication and deprive us of this exercise which is so important to health and comfort.

The idea is often held by the laity that the teeth are easily injured by the measures for cleaning and brushing them. Many of the patients, I have found, look with

horror at the simple cleaning of the teeth, or the directions for use of a dentifrice, with the idea that the enamel of the teeth can be easily removed. This is one of the illusions that I first try to get out of the minds of the freshman dental students, as well as the new patients who come for prophylaxis. They must be brought to realize that the enamel of the teeth is one of the hardest substances in nature, and it is made to stand the hard usages that a life time service may demand. The abrasion that ensues from prophylaxis, the cleaning of teeth, and the brushing of teeth will not in any way measure up to that destruction which is sure to follow the lack of these precautions.

## THE NEGLECTED MOUTH.

By editorial in the *Dental Dispensary Record* (March, 1910) Dr. Belcher thus expressed himself:

“A child cannot be expected to develop into a healthy adult if they are deprived of efficient means of chewing their food properly, or if the food must pass through an uncared for mouth that is more like a cesspool than a receptacle for the transmission of food to the human body, every ounce of which must pass through this disease-breeding area on its way to the stomach, burdened with numerous colonies of poisonous germs, of which over twenty harmful varieties have been found in unclean mouths. No wonder such children are sickly and lacking in strength to resist disease, or that they are not considered bright and intelligent, and figure many times as members of our mentally deficient classes in the school work. Not only this, but an unclean mouth is the direct cause of many ear aches, enlarged tonsils, adenoids, stomach ills, and that most dreadful of children's diseases, diphtheria, is invited.”

Under the title of “Clean Teeth on the Market,” *Dental Dispensary Record* (March, 1911) Dr. Agnes de



FIG. 2. CHILD, AGE SIX, WITH FULL COMPLEMENT OF DECIDUOUS TEETH. NOTE SYMMETRY OF FEATURES..

Second Picture.—Same child. Picture taken three years later, during which time the four six-year molars were lost through neglect. Note mal-development of jaws, which is partially, if not entirely, due to the absence of these most important teeth. (Case of Dr. C. C. Howard.)

Lima of the Bureau of Municipal Research of New York, says:

“Doctors still prescribe tonics for invalids whose decaying teeth are draining their vitality, more than any other cause, and fortunes are spent to attempt to cure tubercular parents who reinfect themselves every time food, medicine and saliva pass over their diseased cavities and gums; millions are spent on purifying the water supply and the soil; medical institutes are endowed to stamp out the contamination of food and air by “pathogenic bacteria,” but the prime breeding plan for germs—the human mouth—is neglected and uncared for.”

From the same journal, (Nov., 1912) H. N. Holmes writes some strong arguments:

“When the slightest eruption of the skin occurs, from no matter what cause, we begin treatment for it, and if



it doesn't heal in a short time we consult a physician, and if he fails to get results, we are thoroughly aroused and seek a specialist without delay, but with the mouth it is quite the reverse.



FIG. 3. SAME AS FIG. 2 AT AGE 18. WITHOUT THE "KEYS TO THE ARCHES" (SIX-YEAR MOLARS) NORMAL DEVELOPMENT OF THE REMAINING TEETH NEVER OCCURS. (Case Dr. C. C. Howard.)

"Not One Person in Twenty after the age of Thirty has a Mouth in a Healthy Condition, and not One in Ten has a Mouth Free from Pus at Any Time.

"We wash our body once a day and our faces and hands several times, but, alas, some of us have our mouths cleaned once or twice a year—maybe. Even then it is seldom well done, for dentists as a rule slight such jobs. for if the patients haven't enough decency, pride, self-respect or what you may term it, for others, than to present themselves with a chloride of lime breath, far be it for the dentist to turn policeman at this age."

## CHAPTER III.

### POPULAR LECTURES ON DENTAL SUBJECTS.

TEETH AND THEIR CARE.—DENTAL SUMMARY.—OUTLINE  
LECTURES: (1) FOR MOTHERS' CLUBS, (2) TO CHILDREN,  
(3) FOR NURSES AND PHYSICIANS, (4) TO  
KINDERGARTEN.—BY STEVENSON.

The subject of oral hygiene is now causing such interest that even dentists in small towns are being called on to deliver lectures before the various schools in their localities. This often places the dentist in a difficult situation, because, in the first place, the subject is new and he is often not acquainted with it. Dentists are not in the habit of writing papers and delivering lectures, and this new request, put before them, sometimes startles them. Again the subject matter is hard to collect and get in shape for a suitable lecture.

Many times I have heard of lectures that were utter failures owing to the fact that they were too scientific and did not give elementary facts. Every dentist who does any lecturing along this line has been called upon by his various friends for facts which will constitute the right sort of lecture in this regard. With these facts before me, I have determined to give the frame work of some good lectures at some length, so as to meet this requirement. One of the best that was furnished me on this subject was sent in by the *Dental Summary*, issued by the Michigan Dental Society.

While this lecture seems very elementary, it was delivered before the senior class of a high class female college, and the results which followed it show that it contained the proper material for this kind of lecture. The great trouble is that we forget how little the people know on this subject. This is one of the points which will have to be guarded against. This lecture and those

following, are among the best which have appeared in dental literature.

A LECTURE ON THE TEETH.

“Recent examination of the teeth of school children in many parts of the world shows that about 96 in every 100 children have diseased teeth.

“Think of it: Only about four children in a hundred who are not suffering more or less from diseased teeth.

“This would be bad enough if the toothache were all the little ones had to suffer as the result of somebody’s neglect; but, as simply a matter of well known fact, the toothache is the smallest part of the trouble. In fact, toothache is not the trouble at all, nor any part of the trouble; it is simply the cry of the nerve, trying to arouse attention of the fact that something is wrong; the call of the nerve to be relieved from the poison that is killing it.

“Statistics show that on account of poor teeth the mental and physical development of the child is seriously retarded.

“The more the physical and mental development of the child is disturbed and retarded, the less is, of course, the general capacity of the child.

“The worse the teeth, the lower, as a rule, is the school-standing of the child.

“Dr. Luther H. Gulick, of New York City, is responsible for the statement that of 40,000 school children examined, those with two or more bad teeth averaged five months behind the grades that they should occupy, and would occupy were their teeth sound. Adenoids were responsible for lagging to the extent of eleven months.

“As decay spreads from the rotting apple to the sound one by its side, so does it spread from the first decayed tooth in the temporary set to the next and the next; and so does it spread from decayed first tooth to

sound second, or permanent one, coming in alongside of it. In a very short time, if neglected, the second teeth are as bad as the first.

“Because of poor teeth, the child swallows its food unchewed, and the habit of bolting is formed. The youth also, for the same reason, swallows his food unchewed, and the habit becomes fixed. The unchewed food is not digested; indigestion and bowel troubles follow, and the child, if it survive, becomes a weakly, undeveloped man or woman, an easy prey to tuberculosis and the host of other ills that prey upon people of low general vitality.

“This is no overdrawn statement; it is amply proved by experience and statistics.

“No claim is made, of course, that bad teeth are the sole cause of disease. Abuse, in like manner, any other part or organ of the body, as important as the teeth, and disease is sure to follow.

“Now, a very large part of this suffering—the half-starved body and the weak brain that follows it naturally, grow out of pure neglect; and by far the greater part of this neglect is due to ignorance. And it seems strange indeed that the world should have been so tardy in realizing the importance of the teeth, and the necessity for their intelligent care. This condition of ignorance may be charged to what seems to be an innate tendency upon the part of scientific men generally to dig and delve in search of the obscure and the comparatively unimportant, while overlooking the much more important and perfectly obvious facts immediately under their observation.

“Let it be understood at the outset that a clean mouth and sound, well cared for teeth are positively essential to perfect health; even to the average of good health; and that such teeth, used to masticate the food as intended by nature, will go a long way toward inducing and conserving that degree of health.

“If we would intelligently care for the teeth, we must first learn to know something about them; how many

there are in the first set and what they are; how many there are in the second set and when they are cut; the relation of the first set to the second, etc.

“It will, perhaps, help us to remember the number of the first or temporary teeth if we associate them with the fingers and toes. Ten fingers—ten temporary teeth in upper jaw; ten toes—ten temporary teeth in the lower jaw; five on either side, both in the upper and lower jaw.

“The first teeth are usually all in by the end of the second year. The first to be cut are the lower front teeth, the central incisors appearing, as a rule, about the seventh month, and lasting usually, until about the seventh year, when they are replaced by the permanent incisors.

“The incisors are the cutting teeth. From the same root word we have the word ‘scissors,’ you know.

“The other temporary teeth appear at short intervals, until, by the end of the second year, the entire twenty are in place.

“Now, it is of the utmost importance that these twenty teeth remain in place with their crowns undiminished in size by decay, until the permanent teeth are ready to replace them. The first teeth should be displaced and pushed out by the second or permanent set. Why is this so important? Many parents think that the first teeth amount to very little, and the sooner they are gotten rid of the better. There could not be a more serious mistake. Let us see.

“We already have considered the effect that decayed and aching teeth have upon the habit of chewing the food. Teeth, especially teeth that are just coming in, require exercise precisely as do other parts of the growing body. When the first teeth are decayed, painful or lost, the permanent teeth do not have the exercise they need, because the food is bolted; that is, swallowed without being chewed, or after being only partially masticated. And

there is another reason why the retention of the first teeth is so important:

“About the time that the first front teeth are beginning to loosen, another tooth, the largest and most important tooth of all, is pushing its way up through the gum, right behind the first ‘baby molar,’ or double tooth. If this last baby tooth or those in front of it, have been made narrower than normal, or have been lost altogether on account of decay or premature extraction, this big, new tooth, which is a permanent one, the sixth from the center in front, and coming in at the sixth year of age, and not being guided into its proper place and kept there by sound first teeth, comes in out of place, too far forward.

“Sometimes it is the width of the tooth, sometimes the width of the whole tooth, too far toward the front. What difference does that make, some may ask? Isn’t the tooth there? Will not the other teeth, coming in later, force it to its proper place? No; that’s just the difference it makes; that’s just the trouble.

“When the first big, strong, permanent, most important tooth comes in too far forward, the jaw is shortened by just that much, and it remains too short.

“It is generally supposed that the jaw controls the location of the teeth in what is called the arch; that is, the semi-circle in which the teeth are located; but that is only another of the many mistakes most people hold in regard to the teeth. The jaw does not control the teeth, but the teeth control the size and the shape of the jaw.

“Now, into this shortened jaw, in front of the sixth-year molar, five permanent teeth must find a place. How are they going to do it? Well, most of you have seen mouths filled with crowded, jumbled, crooked, overlapping teeth; and that’s how they do it. They come in where they can, following the line of least resistance, with nothing to guide them. (\*)

“The sixth tooth, the six-year molar, coming as it should do and usually does, before the first or temporary teeth are lost, is usually regarded as a temporary tooth also, and is allowed to decay, even by parents who mean to give their children the best of care, under the mistaken impression that it will soon be replaced by another and a permanent one. BUT IT WILL NEVER BE REPLACED. The six-year molars, and all the other molars, are cut but once; once lost they are gone forever. They never will be replaced, except by artificial substitutes. a very poor dependence at best.

“And this six-year molar is the most important of all the teeth. Upon its proper location and preservation depends, to a very large degree, the safety, the beauty and the usefulness of all the other teeth.

“When the teeth are all in their proper positions, they form a beautiful even curve, the sort of curved line that nature delights in; and the features possess the contour and balance that make the face so attractive.

“When the teeth are lost, or all jumbled together, the jaws are too small, the lips hang open, and the harmony of the face is marred, when not entirely destroyed. (\*)

“There is, of course, a much more important phase of the subject than mere appearance, although that is certainly important enough, often making or marring the entire life. The more important fact is the use of the teeth as they should be used, to conserve health and strength of the entire body.

“When the teeth are all in their proper places, and stand at the proper angle with the jaw, the grinding surfaces of the upper and lower teeth fit together very closely; and, like the mills of the gods, they grind exceedingly fine, preparing the food as it ought to be for the digestive process that follows. But if one is lost, especially if that one be this first permanent molar, the grinding surfaces drift apart; and, if the difficulty is not

quickly and skilfully remedied, the work that the teeth should do, never can be done properly.

“Then, too, of course, crowded and irregular teeth are much more difficult to care for, to keep clean, they are much more likely to decay, and the gums are much more subject to disease.

“Remember, then, that the tooth coming in at the sixth year, the sixth tooth from the center in front, is the first of the thirty-two permanent teeth, which, with the care that all of the teeth should have, ought to last each of us to the end of life. (\*\*)

“If the child is to have strong, tough, resistant teeth, it is essential that its food contain an ample supply of the bone-building salts of lime. These salts are essential for other purposes as well. When it is known that the epidermis or skin, the bones and the teeth are all built of the same kind of cells, and that these cells depend for their perfection upon salts of lime, the importance of this kind of food readily will be recognized.

“The bottle-fed baby, brought up on the prepared foods so abundantly on the market at this time, starts life with a very serious handicap. According to the authority of scientific men, who are making these subjects the study of their lives, these prepared foods, nearly all of them, are altogether deficient in the bone-building elements.

“The best substitute for the nursing baby’s natural food is cow’s milk. Don’t forget this; don’t be deceived by alluring advertisements written by men who either do not know or care to know what they are talking about.

“The eruption, or cutting of the deciduous, or temporary, or first molars, indicates that the system of the child is ready to assimilate solid foods, and if he is given really solid foods, and taught to thoroughly masticate them, it will be well with that child

“Every meal should contain something that requires good, vigorous chewing; like every other part of the body,



the teeth, gums and jaws require and are developed by exercise, and suffer from lack of it.

“Among the foods rich in the bone-building phosphates of lime, wheat stands high. But, in the process of making fine, white flour, half of the lime-salts are lost and withdrawn with the bran. Whole-wheat bread, while usually not so easily digested, is a much better bone-builder, and any form of whole-wheat, containing every particle of the grain as nature makes it, is a perfect food, and should be largely used.

“No bread should be eaten until it is twenty-four hours old. Fresh bread, especially that made from fine, white flour, forms a soggy, fermenting mass in the stomach, and is not only very indigestible, but furnishes a breeding-place for the germs of fermentation, resulting in sour stomach, colic and many other ills.

“Whole wheat and whole wheat preparations, such as shredded-wheat, triscuit, etc., are excellent. Eggs, oatmeal, cornmeal, rice, and nearly all vegetables contain the lime-salts essential to bone-building. So, also does beef. A simple diet, mixed, composed of the natural foods, will contain all of the elements necessary to good health and good teeth, provided they are well masticated, and provided also that digestion and assimilation are not impaired.

“Experiments made over and over again prove that animals fed on poor foods, that is, such as are deficient in mineral salts of the kinds necessary to body-building, have poor teeth and weak bones; and that, if such foods are continued, animals will starve to death rather than eat it. In this the animals are guided by a sure instinct that no amount of ‘tasting good’ can deceive.

“Adding the necessary salts to the food artificially or giving them in doses as medicines, does not alter the case in the least.

“These experiments and their results apply equally to the child. If it is unable to obtain a sufficient supply of the necessary salts from a mixed diet of natural foods,

the use of bone-meal, or the so-called bone-building drugs, is likely to prove of no avail.

“Whatever promotes good health—air, sunshine, nutritious foods well chewed, hygienic surroundings at all times, plenty of sleep, good habits, all these tend toward the building up of good, strong, solid, healthy teeth.

“Good teeth being acquired, good care is necessary in order to preserve them during life. If the teeth are not good, if they are soft, decay easily, or are lacking in any degree, they require even greater care than good teeth. With proper care, even poor teeth may be preserved almost indefinitely.

“Until within the last few years dentistry has concerned itself chiefly with repairing the damage done to the teeth by decay, and with replacing them with artificial substitutes when too far gone to be saved.

“To-day the aim of progressive dentistry is to prevent dental disorders rather than to cure them.

“To keep the teeth clean, highly polished, free from all sharp angles, irritating deposits, fields for the production of pathogenic or disease-breeding germs, or whatever tends to invite disease or promote decay, is the most useful field for the exercise of the best skill of the progressive dentist. In other words modern dentistry aims to put the mouth into hygienic condition and keep it there.

“The special method employed to bring about this natural, healthy, hygienic condition, and to maintain it after it has been brought about, is known as prophylaxis—oral prophylaxis. Oral refers to the mouth; prophylaxis means warding off or preventing disease; or that which makes for the preservation of good health. Oral prophylaxis then, means treatment that is efficacious in the prevention of dental disorders; of diseases of the mouth and the teeth, and of conditions in the oral cavity tending to cause diseases in other parts of the body.

“So important has this preventive idea become in the minds of the dental profession that there are now, in

many cities, prophylaxis specialists, who devote their entire time to the practice of this important branch of dentistry.

“The creed of oral prophylaxis is that cleanliness is the salvation of the teeth; that a clean mouth and clean teeth mean a healthy mouth and sound teeth; and, as a natural consequence, a bettered, more resistant, physical condition generally.

“Based upon statistics, it is estimated that 72 men, women and children die every hour in the United States from diseases that might be prevented; and it is now known that many of these preventable diseases have their origin in an unhygienic condition of the mouth and teeth.

“The aim of oral prophylaxis is to do its share and a large share, in the prevention of this needless loss of life; to bring about a condition of health and well-being so far as the mouth and teeth are concerned; to keep that part of the digestive tract that is under our control in a normal, healthful condition; and, with the help of the patient, to keep it there permanently.

“How is the patient going to do his share in the work of maintaining the health of the oral cavity? Certainly not by the ordinary thirty-second-lick-and-promise cleaning indulged in by the vast majority of people who use the tooth-brush.

“In the first place, it must be understood that the purpose of the cleaning is not merely to make the front teeth fit to be seen, but to make all of the teeth, on all of their surfaces, positively clean. And this means intelligent and conscientious effort, regularly and faithfully applied.

“To properly clean the teeth, begin by rinsing the mouth with salt water, about a teaspoonful of salt to a pint of water, warm or cold, as may be preferred, forcing it vigorously back and forth between the teeth. Do this with the same vigor and determination that you would put into doing any thing that you thought would prolong your life, increase its happiness or usefulness, or

increase your income. It is just as important as proper mastication, or as the proper setting of a broken arm.

“After using the salt water, put a quantity of good tooth-powder into the palm of one hand, with the other moisten a good tooth-brush with the salt water, and dip it into the powder. Then proceed to scour the teeth.

“Use the tooth-brush as you would a scrubbing-brush on your kitchen floor or in your bath tub. Scrub your teeth; do not be satisfied merely to brush lightly over the surfaces.

“Do not use the brush crosswise of the teeth. You will only touch the high surfaces that are naturally clean, anyhow, and you may work great injury by sawing cavities in the teeth above the enamel, at the gum-line.

“Begin at the gums on the upper jaw and brush downward; begin at the gums on the lower jaw and brush upward; inside and outside alike. As the inside or the tongue side of the teeth is harder to reach with the brush than the outside, more time and care are necessary to get them clean and keep them clean. As a lamentable matter of fact, it must be said that because they are not seen they usually get much less care. Ignorance on this score is much to be lamented. A wealthy, prosperous and successful man of sixty, recently stated that until he was well past fifty, he never had tried to clean the insides of the teeth, thinking that they did not need any care at all.

“Scour the grinding surfaces back and forth, crosswise. Dip the brush into the powder often enough to apply it equally to all of the teeth, and remember that the surfaces that are the hardest to reach need cleaning most.

“Make the cleaning of the teeth as necessary to your comfort as the bath, or the washing of the hands and face. It is far more important. Take plenty of time. Ten to fifteen minutes per day is none too much time to spend at this most important work; make work of it; make it a duty. The teeth should have three to five cleanings each day, in addition to the thorough scrubbing-

described. Remember, that the mouth is a veritable breeding-ground for disease-germs, and that they multiply with astonishing rapidity if undisturbed, while the raking and scraping given to them by the proper use of the brush, to say nothing of the frequent dosing with disinfectant germicides in the shape of tooth-powders and mouth-washes, prevent their increase almost wholly.

“Two or more tooth-brushes should be used, of a rather small or medium size, preferably those with wedge-shaped points on the rows of bristles, as the points work in between the teeth, where most care is necessary. Use your brushes alternately, so that they will have a chance to dry out before being used again. Never buy a cheap brush. And never use a brush, no matter how much you pay for it, after the bristles begin to fall out. An over-used, soft brush, is the poorest kind of economy. After using the brush, rinse it thoroughly in the salt-water and hang it on the rack to dry. Any good mouth-wash will do in place of the salt-water. Powder need be used in most mouths but once each day, preferably at bed-time, if used as suggested.

“A larger proportion of the cavities in teeth start between them, where the brush, however skilfully used, cannot reach. To thoroughly clean these spaces is, therefore, of utmost importance. For this, waxed floss silk, preferably flat, should be used. Insert between the teeth, and draw back and forth until all these surfaces are perfectly clean. Do this at least twice each day; better, do it after each meal.

“Be careful in the selection and use of tooth-picks. If wood is used, select those of some wood of dense close grain, that does not splinter, such as orange-wood. The end of the pick used between the teeth should be flat. Picks are made of special woods and rendered antiseptic by being treated with aromatic solutions which aid in the preservation of the health of the spaces between the teeth. Be careful not to puncture or irritate the gums when picking the teeth.

“It is no easy matter to teach the children to keep their teeth clean, but the necessity of the case makes it the duty of every parent to keep constantly at their children until the habit becomes fixed.

“In spite of the best care we are able to give our teeth, deposits will slowly form on them in most mouths, and there will still be some decay. Therefore, it is necessary to visit the dentist at regular intervals. The frequency of these visits should be governed by the needs of the individual, and this should be left to the knowledge and judgment of the dentist. In very few cases should these visits be less frequent than twice each year.

“As to why teeth decay, an illustration may help to make the cause and process clear. If a drop of acid is spilled upon the marble top of a wash-stand, it boils and bubbles, and, if allowed to remain, will dissolve out the lime and leave the surface roughened. Nearly everybody is familiar with the experiment of soaking an egg in vinegar until the lime in the shell has been dissolved, and the egg, unbroken, then put into a bottle, having a neck half the normal size of the egg. Decay of a tooth is caused by a similar process of dissolving the lime.

“The lime in the tooth is eaten by an acid. This acid is known as lactic acid, familiar to nearly everyone. It is the acid present in sour milk. Its presence in the mouth is due to the fermentation or souring of food particles adhering to and between the teeth.

“In the mouth that is not cared for, the teeth are bathed in this acid practically all of the time, and all the time the acid is at work, dissolving out the lime-salts in the teeth, just as the acids do with the marble slab and the egg shell. This shows why teeth start to decay at the points that are hardest to keep clean. It also shows why extra care should be taken to keep those points as clean as possible. Decay rarely starts on the exposed surfaces of a tooth.

“Now, as to the structure of a tooth. A tooth consists of the crown (the part above the gum), and one or

more roots embedded in the jaw. The outer coating of the tooth, the part that we see, is called the enamel. It is nearly all lime-salts, 98 per cent. It is very hard, very compact, comparatively thin, and has no nerves; therefore, it is without feeling. Its purpose is to stand the wear of grinding, and to protect the softer, sensitive parts of the tooth beneath. (\*\*\*)

“Beneath the enamel is the dentine. It forms the bulk of the tooth. It is only about three-quarters, 75 per cent. lime, and is, of course, not so hard as the enamel. It is something like bone, having tubes and hollow places, within it, along which the germs of decay can spread and multiply without much resistance.

“In the center of the tooth, surrounded by the dentine is the pulp, commonly but improperly called the nerve. It has a great many exceedingly fine, thread-like branches outwardly through the dentine, forming a very complete signal-service, the duty of which is to warn us when danger from decay or other source threatens the health and usefulness of the tooth.

“A tooth that aches, after one has been eating, for instance, is a tooth in distress. Some of the little pulp-branches are exposed and are calling for protection. If they do not get it, the pulp itself will be calling next, and by that time the chances are that the labor, pain and expense of saving the tooth have been increased many fold.

“Here is a case in which a stitch in time may save not only a great deal of suffering, but, by a simple, inexpensive filling, the tooth may be saved to usefulness and comfort. If, on the other hand, the warning is not heeded, the pulp, after protesting with all its might with some pretty severe aches and pains commonly called neuralgia and other things, gives up the fight and dies. Because the pain is felt not so much in that particular tooth as all over the face on that side, the tooth may not be suspected, and frequently physician's bills of large size are contracted in the vain search for relief.

“Facial neuralgia, so-called, of this character and from this cause, is very common. Facial neuralgia from all other causes combined is very, very rare. Therefore, when suffering from neuralgia in the face, suspect your teeth, and at once consult the dentist.

“It is a common notion that a tooth having a dead nerve or pulp can ache no more. This is a delusion. A dead tooth, like any other unburied dead thing, is dangerous, a menace to the health not only of the mouth, but of the entire body. It is a breeder of poisonous germs. If these poisons escape into the mouth, they are mixed with the food and the saliva and swallowed. And, in the case of mouth-breathers especially, the foul gases created are carried to the lungs and thence to the blood, paving the way for tuberculosis and a general undermining of the health.

“To one who knows how vile a dead pulp becomes, the very thought of having one in the mouth makes him sick. And how are we to have pure air in our homes, our schools, our opera-houses, our churches, when, with every breath from such a mouth, these poisons are poured into the atmosphere? As a matter of simple self-protection, we should avoid inhaling the breath from such a mouth.

“If, instead of escaping into the mouth, the poisonous gases get out through the end of the root, the tooth becomes sore, the face swells, pus is formed and bores its way, usually with great pain, out through the jaw-bone and gum, forming the so-called gum-boil. This pus is also a poison, a dead thing; and this, too, is swallowed, making a much more serious condition than generally is known, or may generally be believed. No one can long be well under such a state of affairs, a veritable poison factory within the mouth.

“Many people are constantly ill, constantly under the care of the physician, doctoring for all sorts of troubles, who are simply the victims of blood-poisoning, due to



neglected teeth. The troubles commonly called 'nervous diseases' are largely due to these causes.

"Every year thousands of preventable deaths occur from causes originating in the condition described, although very seldom is the true condition suspected by anybody—except the dentist. He doesn't suspect; he knows.

"Offensive as is a tooth of this character and in this condition, and dangerous as it is to health and life itself, it may be restored to full usefulness, health and comfort. While it is very desirable to have the teeth frequently examined and all the cavities filled while small, a tooth is not beyond redemption and salvation even when nothing is left of it except the root, providing that root is firmly held in its socket. A root broken off level with the gums may be crowned so skilfully as to appear perfectly natural and defy detection, and it may be so applied as to be as comfortable, as serviceable, and, in many cases more lasting, than a well-cared-for natural tooth, that is perfectly sound.

"Another disease to which neglected teeth are subject, is loosening, due to deposits of lime in the form of tartar, and to collections of decaying matter, which are allowed to gather and remain on them. This causes the gums to swell, to become tender, to bleed easily, and gradually to waste away, together with the bony socket that holds the teeth in place.

"This is a very serious condition, not only preventing the proper chewing of the food, because of the tenderness of the teeth and gums, but the teeth themselves become exceedingly filthy, and in many cases large quantities of very rank pus are being continually swallowed, the health being thus most surely and certainly undermined by the two enemies, which ably aid and abet each other, one by preventing proper preparations of the food by the teeth, and the other by converting much of it into rank poison.

“If this trouble is attended to in its early stages, it may be removed and the loose teeth tightened and restored to perfect usefulness; but if neglected, the teeth finally will fall out, ending the chapter in disaster.

“Here, again absolute cleanliness is the great preventive. Teeth that are kept clean cannot possibly get into this distressing and often fatal condition. Here again, dirt, decay, degeneracy and death go hand in hand together.

“This disease, in common with most of those to which human flesh is heir, is much more easily prevented than cured. Those who are threatened with it or suspect that they are, should lose no time in putting themselves under the care of a competent dentist, and then follow religiously and rigorously the instructions given.

“The expression, ‘My teeth are naturally so poor that I am going to let them go and have artificial ones,’ is very often heard from the lips of even comparatively young people; and, while it implies a compliment to the skill of the modern plate-maker, the thought back of it is usually a very unwise one to entertain, and the course a most foolish and unsatisfactory one to pursue. It is hard to imagine a set of natural teeth that are not or cannot be made much more useful, satisfactory, sanitary and comfortable than the best plate ever turned out of a dental laboratory. This attitude has been responsible for the heedless loss of millions upon millions of perfectly sound teeth. It has come down to us from the days of our grandmothers; and while, in those days it may have been justifiable, in these days of advancement in dental science and practice, it is so no longer, except in very rare and exceptional cases.

“If the teeth really are too far gone to be saved, the sooner they are out and replaced the better; for, as stated a mouth full of decayed and decaying teeth and roots is a menace not only to health, but to life itself. But let no one needlessly sacrifice his own teeth for artificial substitutes. Good as they are now, most necessary in their

place, and much as many of us owe to the advancement in dentistry during these last few years, they are but poor substitutes at best.

“You will be perfectly safe in trusting the judgment of a good dentist in such cases. The time has gone forever when a dentist would extract a tooth that might be saved, merely to satisfy the whim of a patient. Preservation and restoration of the natural teeth is the proper field for the exercise of dental skill; and few indeed, and daily growing beautifully fewer, are the dentists who do not recognize this fact, and conduct their practice accordingly.

“Another cause of poor teeth, crowded teeth, malformed jaws and unbalanced faces, with ill health and all the attendant train of suffering and inefficiency, is mouth breathing, due to a growth in the nose called adenoids. This is quite common in childhood, and is very easily remedied; but, if neglected, means a weakened, impoverished body, subject to coughs and colds, throat and lung troubles leading on to tuberculosis. Time will not permit going into this important topic in detail, but it is the duty of parents to watch their children, particularly while sleeping; and, if mouth-breathing is found to prevail, to consult a physician at once.

“Sucking thumbs and fingers in early childhood, the use of ‘baby comforters,’ rubber nipples or other objects held between the teeth, often produces serious deformities of the growing jaws, and should be avoided with far greater assiduity than contagion from the simple diseases of childhood. (\*\*\*\*)

“Just a few words in conclusion:

“Don’t forget that the first teeth are just as important while they last, as the second teeth, if not more so, for the position, soundness and value of the permanent teeth depend, very largely, upon the care that the first teeth receive.

“Don’t forget the number of the first teeth: twenty

in all, ten in the upper jaw, ten in the lower jaw, five on either side in both jaws.

“Don’t forget that the sixth tooth, the six-year molar, is a permanent tooth, and is the largest and most important tooth in the entire set.

“Don’t forget that clean teeth do not decay; that a clean tooth cannot decay; and therefore, always remember to make every effort to keep the teeth clean—all of them, on all their surfaces, all the time.

“Don’t forget that clean teeth, well cared for, and food well chewed, are essential to good health, a sound body and a strong mind.

“And do not forget that you are quite welcome to ask any questions on the subjects mentioned, if everything that has been said is not perfectly plain, simple and clear to you.”

Stars (\*\*) indicate the advisability of introducing slides at points where they appear; or the slides may be left until after the lecture is concluded.

#### OUTLINE LECTURES.

Dr. A. H. Stevenson published in *Oral Hygiene*, this outline lecture, used by the Committee on Public Health and Education of the Second District Dental Society of New York.

“In order to obtain uniform results, we prepared lecture outline forms to cover our most common types of audiences. Three of these I append. They are merely guides for the lecturer, and give him ample opportunity for originality, as may be seen.

#### FORM 1. LECTURE OUTLINE FOR MOTHERS’ CLUBS.

“The following points seem to be the ones that need the most emphasis:

“1. Show that the responsibility for the general health of the child depends mainly upon the mother, and

that she should have sound ideas of how to conserve the child's health.

"2. Bring out the influence that sound, clean teeth have upon the general health of the child.

"(a) Show how diseased and unclean teeth play a large part in the causation of disease. That the main method of infection in the following diseases is the discharges of the mouth: Tuberculosis, pneumonia, influenza, la grippe, diphtheria, measles, scarlet fever, mumps, etc.

"(b) Show that lack of or decay of the teeth cause mal-nutrition, mouth-breathing, adenoids.

"(c) Show how the pain of diseased teeth may be reflected and cause disturbances in the eye, ear, face, neck, head and other parts of the body.

"3. Show how the temporary teeth develop and then the permanent ones. (Use charts.)

"4. Show the importance of preserving both.

"5. Lay particular emphasis on the six-year molar.

"6. Conclude with general mouth hygiene as follows:

"Articles required: Brush—Size, shape and bristles. Floss—How to use. Dentifrice—Warning and advice.

"Method of brushing. Time—Every time the teeth are unclean. Tell something about the removal of tartar.

"N. B.—Use simple language and avoid technical terms. At the close of the talk invite the mothers to ask questions. Remember as many of the questions as possible and mail them with any suggestions to the committee.

"FORM 2. OUTLINE OF TWENTY-FIVE MINUTE  
TALK TO CHILDREN.

"1. (For boys.) Show how success in sports and life depends upon good health.

"(For girls.) Show how success in singing, reciting or any public appearance depends upon good health.

"Show that good health is impossible without clean mouths and good teeth.

"2. Explain the relation of sound, clean, temporary teeth to health. Explain the relation of sound, clean, permanent teeth to strength, endurance, grace, beauty and class-standing.

"3. State briefly how decay is produced and it extends, using illustrations if possible.

"4. Emphasize the importance of preserving the temporary teeth, and the six year molar.

"Introduce the phrase 'A clean tooth never decays.'

"Have children repeat it in unison.

"5. Conclude with general mouth hygiene as follows:

"Articles required: Brush—Size and shape, bristles. Floss—How to use. Dentifrice—Warning and advice.

"Method of brushing. Time—Every time the teeth are unclean. Tell something about the removal of tartar. N. B.—As above.

"FORM 3. LECTURE OUTLINE FOR NURSES (AND PHYSICIANS.)

"Preface with remarks showing the sphere of preventative medicine, and as a part of same the importance of the oral hygiene crusade; indicating its scope value and application. Emphasize the necessity of the co-operation of the nurses (and physicians) to bring about its aim.

"The following points seem to be the ones that need the most emphasis:

"1. Show how unclean mouths are ideal mediums for the proliferation of bacteria. Indicate the following as diseases whose main means of infection is the discharges of the mouth: Tuberculosis, pneumonia, influenza, la grippe, diphtheria, measles, mumps, etc. (Quote authorities, as per Form 3a.)

"Show how lack of or impairment of the teeth cause malnutrition, mouth breathing, adenoids.

"2. Give brief histology and development of the teeth, temporary and permanent, showing how calcification proceeds and dietetic influences. (Use charts.)

“3. Show prevalence and nature of dental caries as a disease itself, and conditions favorable for its inception and increase. Show how reflexly disorders of the eye, ear and brain may result.

“4. Give general mouth hygiene for normal conditions indicating:

“Articles required: Brush—Size and shape. Floss—How to use. Dentifrice—Warning and advice.

“Method of brushing. Time—Every time the teeth are unclean. Mention the formation and removal of tartar.

“5. Give the application of the hygiene by nurses, emphasizing:

“(a) The preparation of patients for operations.

“(b) The care of the mouth during pregnancy. (Read article in Vol. I, No. 2, *Oral Hygiene*.)

“(c) The care of the mouths of children.

“(d) The care of the mouths of invalids and convalescents.

“6. Conclude with the importance of strict oral cleanliness on the part of the nurses, as a safeguard against infection for themselves and for those for whom they care.

“N. B.—As above.

“FORM 3A. LECTURE OUTLINE FOR NURSES AND PHYSICIANS.

## NOTES.

“‘From a hygienic standpoint the secretions of the mouth constitute the chief, if not the only, source of respiratory infection.’—Dr. Wadsworth of the Medical Commission for the investigation of Acute Respiratory Diseases, N. Y. Dept. Health.

“‘Each patient should be furnished with a new tooth-brush and a bottle of antiseptic mouth wash, and the nurse instructed to cleanse the mouth every 2 or 3 hours, prior to a surgical operation.’—Moynahan.

“ ‘Three patients (two men, one woman) died from tuberculosis. In each of these three cases the contributing cause was a decayed or impacted third molar tooth.’—M. Dubois, Chief of Clinics at the Ecole Odonto, Technique. Paris, France, from *Revue Generale de L’Art Dentaire*.

“ ‘Several cases of tonsillar inflammation are caused by the focus of infection in the mucous membrane near a decayed third molar tooth. Also persistent throat inflammation and tonsilitis is caused by the infection from decayed or diseased teeth.’—F. Le Maire, Paris, France, in the *Odontologue*.

“ ‘Many cases of chronic lacuna tonsilitis have arisen from, and are continued because of neglected teeth and gums. Chronic laryngeal catarrhs may be continued by, if not originated by, diseased conditions of the teeth and gums.’—Wyatt Wingrave, M. D., Durham, Eng., in the *London Lancet*.

“ ‘Measles, German measles, chicken-pox, whooping cough, mumps, scarlet fever, or scarletina, diphtheria, influenza and small-pox, all have for their method of infection either the discharges of the mouth, nose, or particles of the skin, and the most fertile soil and the most prolific breeding ground; and the best harbor and the never failing spring for the germs of all these diseases are filthy and decayed teeth.’—A Brown Ritchie, medical officer to the Education Committee of the City of Manchester, Eng., in *Allen’s Civics and Health*.

“ ‘Out of 684 sarcomas in different regions of the body, 309 of these were either on the lower lip, upper lip, tongue, mucus membrane of the soft and hard palate. One very frequent cause of these malignant tumors is the constant irritation of a sharp edge of a decayed tooth.’—Woods Hutchinson, A. M., M. D.

“ ‘Ninety per cent. of all the destructive diseases of the upper and lower jaw bones have for their chief and almost their sole cause, dental alveola abscesses (and 90 per cent. of the dental alveola abscesses are caused by



decayed teeth). Persistent headaches and general reduction in health are frequently caused by insidious aveola abscesses.'—Stewart L. McCurdy, M. D. (Section of Stomatology, A. M. A.). The value of our most recent efforts in the training schools for nurses is self-evident. These nurses, heretofore uninstructed on the subject, become active agents of the campaign.

“OUTLINE OF SHORT TALK TO KINDERGARTEN CHILDREN.

“Open talk with either story or demonstration to attract attention, and then proceed with the following:

“1. Describe graphically the doorway and vestibule of a house, and the effect on the interior of that house, be it ever so neat and clean, of a dirty entrance with children passing in.

“2. Show the analogy of the mouth as the doorway and vestibule of the body, and the effect on the interior of the body of an unclean mouth with food passing through and carrying filth into the stomach.

“Results: Disease and illness; loss of play and school.

“3. Ask how many children washed their faces before coming to school. (Usually unanimous.) Then show the importance of cleaning the ‘inside of the face,’ in order to be clean and well.

“4. Very briefly, with a large model, if possible, show the alignment of the teeth. Tell the necessity of keeping them clean to prevent ‘holes’ and pain.

“5. Conclude with simple mouth hygiene, demonstrating with giant tooth-brush on model, and emphasize the frequency of this operation and the use of a dentifrice.”

## CHAPTER IV.

### POPULAR LECTURES—CONTINUED.

AN ILLUSTRATED LECTURE, ZARBOUGH.—LECTURE FOR SCHOOL CHILDREN FROM FOURTH TO EIGHTH GRADE, CORLEY.

—LECTURE FOR SCHOOL CHILDREN, HUNT.

If it is convenient to obtain the lantern and proper slides, the following lecture by Dr. L. L. Zarbough, can be used to advantage. The cuts suggested are easily made and show to good advantage. While the article was written on the subject of "Moving Pictures in Dentistry," I have moved it around a little so that it will fit the subject of "Outline Lectures in Dentistry."

"Open with a home scene, showing family group, children playing or reading, mother sewing or darning, father reading the evening paper. He reads an article, 'The time to begin to care for teeth is in childhood,' etc. Father calls mother's attention to the article, which is then shown on the screen. They then look at the children's teeth, and decide then and there to instruct the children in the care of their teeth.

"Next is shown a dental nurse or dentist instructing the children in the proper manner of caring for the teeth, the use of dental floss, the *folly* of blunt wood tooth-picks, etc., the correct method of brushing the teeth, etc.

"Then follow with a short, 'cute' picture of 'the baby' brushing his teeth, as the dentist has directed.

"Other subjects will be the interior of a school-room, showing the examination of school children's teeth, showing that the instruments are sterilized after each child—a near view of just how it is done; also showing a near view of 20 boys and girls, showing only the mouth and teeth, and pointing out the decayed teeth in each mouth and other defects as they exist.

"Show the number of percentage of 20 children needing dental services. It should be vivid and convincing,

and will go a long way towards removing the prejudice existing in the minds of many members of school boards and teachers against it. This part of the lecture will awaken such an interest on the part of the public,\* that they will demand the examination of school children's teeth—the very thing we are striving for; and the best way to get into the schools is to create an interest in the public mind, which will soon grow into a demand.

“Then show a near view of an unhealthy mouth, loose teeth, tartar, pus, etc. Move the loose teeth with an instrument; show the ruin that neglect will cause in a mouth; then show this same mouth as it will appear a short time later, unless cared for, as barren of teeth as the mouth of a new baby.

“Next show the *progress of decay*, by picture or black-board illustration, in a tooth from the very start until the death of the dental pulp, the breaking down of the enamel, etc. This will be done mechanically; the decay will be seen *moving* towards the pulp; the period or time at which the tooth begins to ache will be pointed out, etc. Some of the text, no doubt, will be along the following lines:

“Fig. 1. Uncared for teeth, showing food particles, which, fermenting, form acid.

“Fig. 2. Showing the acid attacking the lime in the enamel rods.

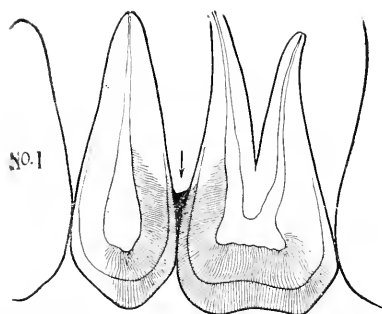
“Fig. 3. Showing decay attacking dentine.

“Fig. 4. Showing further progress of decay; *tooth begins to ache*.

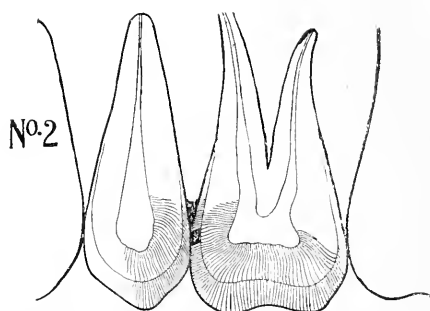
“Fig. 5. Showing undermining and breaking down of enamel walls, exposing large cavity which has been forming, unsuspected, for months.

“Fig. 6. Showing death of dental pulp, formation of gas, pus, etc., in pulp chamber; escape of gas at apex, swelling, abscess, etc.

“It has been suggested that inasmuch as we show the death of the pulp, for a change, and to give the people a chance to relax a little, we show the *funeral* of a dental

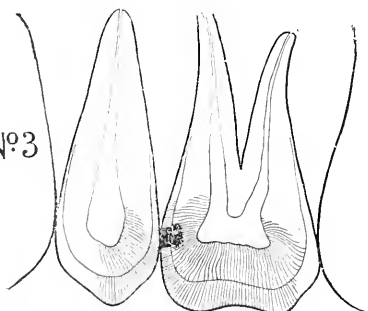


No. 1



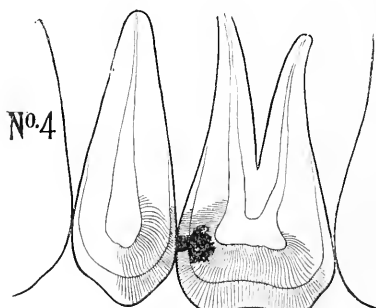
No. 2

*SHOWING FOOD PARTICLES, WHICH FERMENTING, FORM ACID ATTACKING THE LIME IN THE ENAMEL RODS*



No. 3

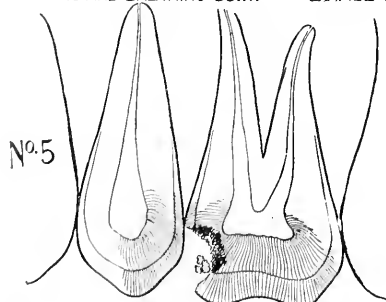
*SHOWING DECAY ATTACKING DENTINE*



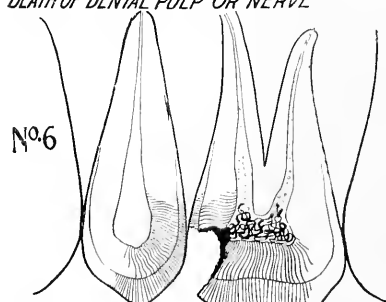
No. 4

*Further Progress of Decay -- Tooth begins to Ache.*

*UNDERMINING AND BREAKING DOWN OF THE ENAMEL WALLS      DEATH OF DENTAL PULP OR NERVE*



No. 5



No. 6

*Exposing Large Cavity which has been forming, unsuspected, for Months.      Formation of PUS and GAS in Pulp Chamber*

FIG. 4. SHOWING THE VARIOUS STEPS IN TOOTH DECAY.

pulp, with the owner of the tooth as chief mourner. Worked up properly it would be very funny and make the people in the theatre wonder just how long they will dare to wait before they, too, will have a funeral of their own.

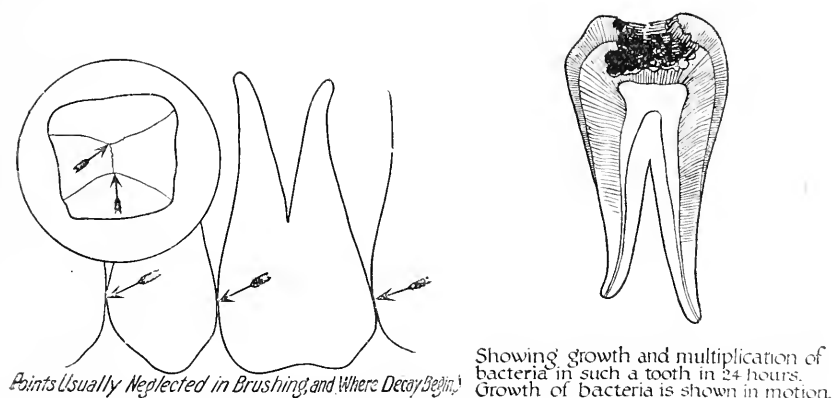


FIG. 5. SHOWING THE STEPS IN TOOTH DECAY.

“Fig. 7. A badly decayed molar, showing the growth of bacteria in such a tooth in 24 hours. The multiplication of germs also will be shown in *motion* and will teach such a lesson that anyone seeing it, who has a decayed tooth, will not go to bed without making some effort to *clean it up*. When we consider the appalling rapidity with which bacteria multiply we can realize how interesting this picture is sure to be. According to Conn, professor of biology at Wesleyan University, “it is the power of multiplication by division that manes bacteria so significant. This power of growth is almost incredible. Some species divide every 30 minutes, or even less. At this rate each bacterium would produce, in a single day, more than 16,500,000 descendants; in two days about 281,500,000,000, or about one solid pint. At the end of the third day, unless checked, the product of one original bacterium would weigh about 16,000,000 pounds. Of

course, this growth is only theoretical, as under no conceivable bodily conditions could it go on unchecked."

"Tell about a boy *who would not clean his teeth*; show him going to bed with the toothache (making a striking example of him), show the usual fuss, hot water bottles, etc.; then show a dream that he has while in bed; he dreams of a trip to the dentist, as he *supposed* it would be. Very funny, of course, yet so arranged as not to bring criticism on the profession or detract from the real purpose of the lecture. Then after the night-mare, a trip to the dentist as it *really was*; show him treated kindly and relieved of his suffering, etc. State that *fear* and ignorance cause more pain and keep more people from visiting the dentist than any other one thing.

"Next tell the good resulting from care of the teeth; show a healthy mouth from childhood to old age; show teeth without a blemish, every one sound, without even a filling. This, too, will teach a great lesson and make a lasting impression."

LECTURE FOR SCHOOL CHILDREN FROM FOURTH TO  
EIGHTH GRADE.

Compiled by J. P. Corley, M. D., D. D. S., Sewanee, Tenn.

Star (\*) indicates the advisability of introducing slides at points where they appear; or the slides may be left until after the lecture is concluded.

We have a great many good things in this life, but the greatest possession of all is good health. Health is more important to children than to grown up people, because if one is not well while he is growing, he will not have a strong vigorous body when he becomes grown up, and he will be more apt to have all kinds of diseases during the rest of his life.

Clean, wholesome, well-prepared food has more to do with the health of a child than any other one thing. If food is clean and wholesome, but is taken through a mouth which is unclean and unwholesome, it will not be clean and wholesome when it goes into the stomach.

(\*) This first picture shows a man with his front cut away, showing the canal through which the food passes into and out of the body. The large hole which we see at the top of the canal is the mouth. If the food is clean and the mouth is clean our stomachs will get clean food, but if the mouth is filthy, the food will surely be made filthy before it is swallowed. A great many germs, such as diphtheria, scarlet fever, typhoid fever, and tuberculosis, are frequently found in mouths which are habitually unclean and full of decayed teeth.

Some times, after a person gets well of a disease, he will carry the germs of this disease in his decayed teeth, and by spitting, and various other ways, give the disease to other people.

(\*) This is a toothless pair. Old "Mammy" has lost all her teeth and the "baby child" has not gotten hers; at least, we can't see them, but if she should scald her little mouth bad enough for the gums to come off, we would see a row of sacks just under where the teeth will peep through when they come into the mouth.

(\*) Just inside of this row of sacks there is another row of smaller sacks. If we should slit open one of these sacks what do you think we would find? The top of a beautiful little tooth like a bulb, which in the spring time peeps up through the ground and opens into a beautiful flower. This tooth is pretty and clean and hasn't a decayed spot about it, and if it is kept clean as long as it remains in the mouth, it will never decay. The baby ought not to suck her thumb or keep a pacifier in her mouth all day, because this will mash these little sacks out of place and will make her teeth crooked. (\*) It will also change the shape of the soft bones of the front of the face and make her little nose turn up like this. (\*). So, if you don't want the baby's nose to turn up, you had better tell your mother not to let her suck her thumb.

(\*) The picture on the left shows the upper part of the mouth of a child two and a half or three years old, with all the first set of teeth in place. You see that they

are all sound and regularly arranged. There is never a crooked or misplaced tooth in the first set, but there are frequently mis-placed teeth in the second set. The most common cause is that the mouth and jaws have not grown large enough for the second set. Chewing is what makes the jaws grow, so if your teeth are crowded and crooked, it is because you didn't chew with your first set. Sometimes, as we will see in a moment, other things keep the jaws from growing and mis-place the tooth, but the lack of chewing is the main cause. The picture on the right shows the same case at about six years old. It has another group of teeth. They belong to the second or permanent set. If you lose these you will never get others to take their places. They are called the sixth-year molars, and are the largest and most useful teeth in the mouth. They are more frequently decayed than any others for the reason that boys and girls at six to nine years don't usually keep their teeth clean. The mother usually thinks these teeth are part of the first set, and thinks it does not make much difference if they are lost, but we will have more to say about these teeth in a moment. You will notice that one of the front teeth is missing. Do you suppose the dentist had to pull this tooth because it ached? No.

(\*) It just dropped out and "didn't hurt a bit." I am going to show you why it dropped out.

(\*) In this picture the bone has been cut away from the roots of the temporary teeth and we find that just above each little temporary tooth there is a big permanent one. The permanent tooth comes down upon the end of the temporary tooth and nibbles it off as a mouse nibbles cheese, so that by the time the permanent tooth gets ready to come into the mouth the temporary tooth has lost its root and drops out. But I am going to tell you something which I want you to tell your mothers. If the temporary tooth is allowed to decay until it aches, the permanent one will stop nibbling and you will have to go to the dentist and have him grind it down to the



gums so that the new tooth can push it like you would drive one nail out with another. This is one reason why the temporary teeth should be kept clean and free from decay. Another reason is that you can't chew so well if your temporary teeth are decayed. Your jaws will not grow and be large enough for the permanent teeth, and you will suffer from indigestion and its consequences. It will also be impossible to keep your mouth free from germs and the new teeth will decay as soon as they come in.

(\*) When one is four years old the teeth are close together, but if the jaws are properly used in chewing, they begin to separate as the jaws grow, so that by the time one is six years old, the teeth do not stand apart as they do in this picture.

(\*) The dentist should put in a little appliance to spread the arch, otherwise the permanent teeth will be crowded.

(\*) This man didn't chew his food when he was a boy. I guess he just gobbled it up with both hands like this—(Illustration), so his mouth didn't grow and his teeth were all awry. His mouth and face didn't grow either, so he had a big head and a little pinched face.

(\*) This man chewed his food when he was a boy, and when he grew to be seventy-five years old, he had all his teeth and was a good-looking, hearty old man. I guess he just chewed and chewed and chewed, until the food just swallowed itself. You needn't bother about swallowing your food. After it has been sufficiently ground, it will slip down without any effort.

(\*) This is the lower set, and they are just as fine as the upper. Those dark lines which you see marking the tops of the back tooth are grooves, which divide the top or grinding surface of the tooth into points and depressions. By this arrangement the free surface of the tooth is increased and its unevenness makes it a much more efficient grinder.

(\*) This is the same case with the teeth brought to-

gether. Notice how beautifully they fit, and also that each upper tooth touches two lower ones. Which one of these teeth could one afford to lose?

If you should saw through a front tooth and through the gum and bone to the end of the root, you would find that the tooth is made up of four different substances. The one which covers the top is enamel, and it is the hardest organic substance in the world except diamond. The next substance which makes up the bulk of the tooth is dentine, which is not so hard and wears and decays more rapidly. Encasing the root is a still softer substance called cementum. Occupying a canal in the center of the tooth is the pulp, which is composed of blood vessels and nerves. When decay makes a hole through the enamel and dentine into this pulp, the tooth begins to ache. Surrounding the root and attaching it to the gum and bone, is a thin membrane—the peri-cementum. If you allow tartar to accumulate on the teeth and remain for a long time, it will destroy this membrane and the tooth will loosen and drop out. Teeth are lost mainly in two ways—by decay, which destroys their crowns, and by disease of the gums and destruction of the peri-cementum. Both of these causes can be prevented by yourself, and I am going to tell you how you may do it. We will first tell you how to avoid diseases of the gums.

(\*) If you will examine your teeth when you first get up in the morning, you will find them covered with a thin, soft, yellowish deposit, which you can scrape off with a tooth pick and examine. It looks like cream, but it doesn't taste like cream and it doesn't smell like cream. It is composed of epithelial cells, which shed from the lining of the mouth, mucus and microscopic granules of lime from the saliva, and if the mouth has not been cleansed of food before retiring it will contain decayed particles of food. If you do not brush this deposit off carefully before eating, the food will strip it down over the tooth and pack a little ring of it under the free margin of the gum. If it is allowed to remain there for a

very long time, it becomes so hard that only the dentist can remove it, and it will cause the gums to inflame. A little is added to it every day, and by and by the entire root will be covered and the gum destroyed.

(\*) This is practically the same thing which causes disease of the gums.

(\*) See this deposit on the side of the tooth on the right. In the picture on the left, this deposit has been removed, showing how much of the membrane has been destroyed.

(\*) The tongue side of the lower front teeth is the most favorite place in the mouth for the accumulation of this deposit, partly for the reason that a great quantity of saliva is poured out at this point, but principally because these surfaces are not properly brushed.

(\*) This shows a deposit on the cheek side of the upper back teeth, which is also a surface not usually reached with the brush.

(\*) After the gums have gotten as bad as this, there is no way to save the teeth, and they will soon be dropping out. Remember that this disease of the gums can be prevented by thoroughly brushing the teeth twice a day. We will show you in a moment how to brush them thoroughly. Let us now take up decay, which is the other great disease of the teeth, and we will then show you how both may be prevented.

(\*) If you will examine the tops of the back teeth immediately after eating you will see that the little grooves which mark their surfaces, are filled with food. At first the food is granular and may be removed easily. Usually a vigorous rinsing of the mouth is all that is necessary, but if it is not removed at once it begins to ferment and develops a muculaginous condition, which makes its removal much more difficult. During the process of fermentation, an acid is produced which dissolves the enamel. This is about the only thing which causes teeth to decay. Hence, if no food be allowed to

remain in the mouth until fermentation occurs, there will be no tooth decay.

(\*) In tooth No. 1, the decay is very small. The point where it made its way through the enamel is scarcely larger than the head of a pin, but you can see that it is much larger in the dentine than it is in the enamel. This is because the dentine decays more rapidly than the enamel. A cavity can be prepared for filling at this stage with little time, pain and expense, as shown in fig. No. 2, but if you wait until the cavity becomes large, as is shown in No. 3, it requires much more time, hurts much worse, costs a great deal more and does not last so long. Hence, the teeth should be examined several times a year by a dentist, and every decayed spot which is too deep to dress out, filled while it is small. Tooth decay never gets well, but always gets worse, so the sooner the cavity is filled, the better.

(\*) These pictures show the history of a tooth from the beginning of decay until the development of an abscess and the establishment of a fistula, commonly called a gum boil. (Go more or less into the details of the different steps of the process and the changes which take place in the pulp, giving a few facts pertaining to the proper treatment of such cases with special emphasis on the importance of retaining the tooth.)

If the residue of food is not removed after each meal and the last thing eaten something soft and sticky, as is too frequently the case, the mouth will sooner or later present the appearance of this one with cavities between the teeth and in the depressions in the tops of the back teeth, and unless dental attention is given this case, the teeth will soon be aching and breaking down like the ones in the next slide.

(\*) Some of these teeth have broken so badly that they are worthless as grinders, they are liable to ache at any time and develop abscesses, they are so many garbage cans infesting the saliva which is constantly being swallowed and contaminating all food and drink. A

mouth in the condition of this cannot be otherwise than filthy and a great menace to the health of its possessor and its neighbors.

(\*) This is a side view of the same case with the teeth brought together as in chewing. It shows what an enormous amount of grinding surface is lost. But even though your teeth are as badly broken down as these, you should not pull them out. Their tops can be restored by fillings, inlays, and crowns, so long as the roots are strong, which is immensely better than artificial substitutes. Some grown up people may tell you that it makes little difference if you lose this first permanent jaw tooth before you are fifteen years old, because the space will soon be filled up by the next tooth coming forward. Well, the space does fill up. More's the pity. It would be better for you if the space didn't close up. Let me show you how the space closes up.

(\*) The teeth behind the space lean forward, and lean forward, and lean forward, and the tooth in front of the space leans backward and leans backward, until their top corners almost or quite touch, thus closing the space at the top, but not at the bottom.

In thus leaning toward each other, their touching surfaces are so turned that they fail to touch the upper teeth in chewing and their fit in is entirely spoiled. The bone buckles as the teeth lean, so instead of losing the use merely of the tooth extracted, you also lose one-half to two-thirds of the grinding efficiency of all the grinding teeth on that side of the mouth. But this is only one of the many consequences of losing this tooth in early life. It causes a general warping of the bones of the nose and front face, which often helps to produce catarrh and a number of other diseases which we have not time to mention. It is safe to say that the loss of this tooth in early life shortens a man's days on an average of four or five years.

If the tooth is so badly decayed that only the roots are good, those roots ought to be treated and filled and

kept in place until one is at least twenty years old. You may do anything that your dentist tells you to do except have this tooth pulled. If he insists on pulling it, then you should tell your mother that you have a poor dentist, and ask her to let you go to another. It is very seldom that even a temporary tooth should be pulled with forceps, and no permanent teeth, except the wisdom tooth, and seldom that should ever be pulled. If you forget everything else in this lecture, don't forget what I have said about this first permanent back tooth. Remember that it is yours at six years of age and does not replace a baby tooth, but comes behind the last baby back tooth.

(\*) This picture shows how much better a man who has not lost this tooth can chew than one who has. One has at least one-fourth more grinding efficiency than the other.

(\*) When this fellow was a boy, he didn't chew his food or brush his teeth, so they soon decayed and ached. He had two of his upper teeth pulled. His upper jaw stopped growing, but his lower jaw kept on growing, so when he got to be a man his teeth didn't fit each other and his jaws were not the same size. His chin protruded like this (Illustration), and he looked like this.

(\*) Do you want to look like that? Well, you had better not have your teeth pulled out.

(\*) This is the kind of dentist who pulls teeth! If your dentist looks like this you had better change your dentist.

(\*) This picture shows how the adenoid tissue in the naso-pharynx sometimes becomes enlarged and stops up the air passages, so that you cannot breathe freely through your nose. This makes you more susceptible to nose, throat, and lung trouble. It should be removed as soon as discovered. If you are accustomed to sleep with your mouth open and breathe through your mouth while awake, you had better have your physician examine you and see if you have adenoids, and if you have,

they should be removed. They frequently spoil the shape of the mouth and make the teeth crooked.

(\*) This is the way the teeth frequently look when one has had adenoids. If your teeth are irregular like these, you should go to the orthodontist (the dentist who straightens teeth) and have them straightened. It can be easily done while one is young, but if you wait until you are old, it is very difficult.

(\*) These pictures show how the face looked before and after straightening the teeth. The teeth are much more easily and thoroughly cleansed, and are therefore much less liable to decay if they are regular and straight and fit each other properly. They are also much more efficient grinders. The first thing for you to do is to see a dentist and have him remove all deposits which you cannot brush off, fill all cavities and put your mouth in perfect order and show you how you may keep it so.

In making the dental toilet, the first thing to consider is the brush. Any kind of brush is better than no brush, but the one at the bottom of this picture is too large. Well, it is not too large to brush the cow's teeth with, but if you don't weigh more than two hundred pounds, it is too large for you. If you have a new brush as long as this one, you can improve it by shaving the bristles off for about the length of the brush. You will then have all the brush that you will be able to use. The brush at the top is excellent. It has a long tuft of bristles on the end which enable you to reach the back sides of the last back tooth. The narrow nose, broad base and short body makes it adaptable to the various situations and the curve of the handle is an advantage. Brushes are made in soft, medium and stiff bristles. You should use a soft brush.

The next consideration is a tooth powder. Most all tooth powders are made of the same thing—Precipitated Chalk. They vary mainly in the perfumes and aromatic and antiseptic which they contain. If you get your mouth clean you don't need a perfume. Perfume in a

dentifrice is a disadvantage, because it deodorizes the mouth and deceives you. A pungent aromatic does the same thing and interferes with the exquisite sense of touch and taste in the tongue, which is the sanitary officer of the mouth, and you may think your mouth is clean when it is really only deodorized. If you can get your mouth perfectly clean, you do not need an antiseptic, whereas, if you fail to cleanse it thoroughly, an antiseptic is of slight and transient value.

Pass the brush as far back in right buccal pouch as possible, place high up on the gums above last upper back tooth and bring downward with a rotary sweep.

You will see that as the bristles slide off the gums onto the teeth, they separate and sweep out the triangular spaces about the necks of the teeth. Now let me ask the girls a question. "If you were going to sweep the floor of a street car, would you sweep it across the car or down towards the end of the car? When you are sweeping the teeth to get them clean, will you sweep across the teeth or down towards the end of the teeth?" You may think that hard to do, but just to show you that it is not, I will brush mine and let you see. (Illustrate).

Place bristles of brush on cheek side of upper right molar gums and sweep downward five strokes. Move forward to bicuspid region and repeat. Go back to cheek side of lower molar gums and sweep upward five times. Move forward to bicuspid region and repeat.

Place brush high up on tongue side of left upper molar gums and sweep downward with a rotary stroke five times. Move forward to region of bicuspids and repeat. Place brush on tongue side of lower molar gums and move upward five times. Move forward to bicuspids and repeat.

Take brush in left hand, place brush high up on cheek side of upper left molar gums and sweep downward with rotary stroke five times. Move forward to bicuspids and repeat. Place brush low down on cheek



side of lower molar gums and sweep upward. Repeat for bicuspid.

Place brush on tongue side of right upper molar gums and rotate downward. Same for bicuspid. Same for lower molars and bicuspid. Change brush to right hand.

Place brush high up on lip side of right upper canine gums and sweep downward working around to left canine. Pass to lip side of lower left canine gums and sweep upward working around to right canine.

Place brush high up in roof of mouth and sweep forward and downward over right canine. Work around to left canine.

Place brush well under tongue and sweep forward and upward over left canine. Work around to right canine.

Place brush back on grinding surface of right upper molars and sweep back and forth to bicuspid. Same on left upper molars and bicuspid.

Place brush far back on chewing surface of left lower molars and sweep back and forth to bicuspid. Same on right molars and bicuspid.

Wash brush and hang up to dry. Rinse mouth vigorously with tepid water. Use tooth pick or dental floss between all teeth and behind last teeth. Rinse mouth again.

The dental toilet should be performed in this way before retiring and before breakfast. Immediately after eating the mouth should be vigorously rinsed and a tooth pick or floss used. If gums are soft or sore they should be vigorously massaged with the pad of the finger once or twice daily.

If a tooth should be knocked out accidentally, it should be washed and replaced immediately and a dentist consulted at once.

In case of illness the mouth should be kept as clean as possible both mechanically and by the use of lime

water and other antiseptics. The tongue should also be frequently cleansed and scraped.

(\*) What is the matter with this little fellow? Did you ever have toothache? Did you cry? If you will follow the instructions given in this lecture you need never have toothache again.

It is not what we learn that makes us wise and happy, it is what we remember and practice.

LECTURE FOR SCHOOL CHILDREN, BY GEORGE EDWIN HUNT,  
M. D., D. D. S., DEAN OF THE INDIANA DENTAL COLLEGE.

"Now, young ladies and gentlemen, I am here today to give you a talk about the mouth and teeth, and since it is easier to ask questions than to answer them, I am going to begin by asking you a question or two. The reason why your teachers ask you so many questions is because it is easier to ask them than to answer them. The first question I am going to ask is, 'How many of you washed your faces before you came to school this morning? Hands up.' Well, that's good. I guess everybody washed their faces before they came to school this morning. There's one boy over there in the corner that only put his hand up part way, but I guess he must have washed for a high-necked collar. Now, I'm going to ask another question, 'How many of you cleaned your mouths before you came to school this morning?' Ah! that's not quite so good. Quite a number of you did, but there's quite a number of you that did not. Now, in my opinion, if you are going to make a choice between these two things, I think you should clean your mouths and not wash your faces, but if I were you I would do both, because if you don't wash your faces you won't look very pretty, and if you don't clean your mouths, a lot of other things are going to happen to you that I'll tell you about.

"Now for another question, 'How many of you ever had toothache?' My goodness! Nearly everyone of you has had the toothache. And those of you that haven't

had tooth-ache certainly have seen people having tooth-ache and know what it is like. Suppose I tell you what makes your teeth ache. In order to do it, I am going to ask you another question. I am a great fellow for asking questions. 'Suppose the evening meal was over and everybody had left the dining room but mother, and mother is clearing up the table. She finds some nice boiled potatoes, and here is a nice piece of meat too large to be thrown away, and here are some other vegetables that she can keep until to-morrow. Maybe she will chop up that meat and put potatoes with it and have hash for breakfast. When mother makes hash it is a pretty good thing to eat. Now, where does mother put that food to keep it until to-morrow, so that it will be nice and fresh?' (A pupil—'In the ice box.') Yes, she puts it in the ice box. But why does she put it in the ice box? Why not just put it out on the back steps where the sun will shine on it and the rain will fall on it? Now, we won't say anything about the dog or the cat getting it or the birds carrying it away, but just tell me what happens to food if she were to do that? (A pupil—'It would rot or decay.') That's it. It would rot or decay. Well, that's just exactly what happens to food in your mouth. That isn't very pleasant to think about, is it? Every time you eat, you leave some particles of the food, no matter what kind of food it is, about the necks of the teeth and in between the teeth, and if it isn't removed that food rots or decays just as the food from the dinner table would do if mother put it out in the sun and rain. Now, when that food rots in the mouth there are certain acids formed, so you are carrying around a sort of acid factory in your mouth and nobody wants to feel that they are an acid factory. This acid dissolves the tooth just as water will dissolve sugar when you pour the sugar in the water and stir it up, although it does not dissolve it nearly so fast. But it dissolves it just a little at a time and the first thing you know that tooth has a cavity in it. A little later on that cavity gets deeper and pretty

soon the tooth begins to ache. And that's the way you have decayed teeth and have toothache. Don't you think it would be better not to leave those particles of food around the teeth so that they will form acid and give you toothache?

"There are three reasons why I think you ought to take care of your teeth. The first reason is that you will not have pain. The second reason is that your health may be better. The third reason is that you may be more beautiful. Now, when I talk about being more beautiful, these boys laugh in their sleeves because they think they don't care whether they are beautiful or not, but we girls know that in a few years from now we will wish we were good looking, don't we?

"Now, in regard to the first of these three reasons. You have told me that nearly all of you have had toothache and that those who have not had toothache have seen people who were having toothache, so that I don't think it is necessary to spend any time in telling you that toothache is not a good thing to have. Nobody would go around hunting for a toothache. So we will just take it for granted that you know that you don't want a toothache and think that your teeth should be cared for on that account.

"Now for the question of health. You have all heard of a certain part of the body which has an awfully long name, and which it is difficult for me to remember, but I can sometimes recall it—the alimentary canal. It is in this alimentary canal where all digestion of food takes place, and if it wasn't for the the alimentary canal, we would all starve to death. I don't know whether you know it or not, but the alimentary canal in grown-ups is over thirty feet long. That would make a person awfully tall if the alimentary canal was straight, but it isn't straight. Now here's the point I want to make. In that whole thirty odd feet of the alimentary canal there are only three inches—these three inches from the teeth to the back of the mouth—over which you have control of

your food. Now, since digestion starts here in the mouth and digestion cannot start properly unless this food is well chewed, and since you have no control over the food after you swallow it, don't you think it's a good plan to take care of it while you have a chance to do so?

"Now I'm going to tell you how to eat. I expect you think you know how to eat but I don't believe you do, and I'm going to ask you to do something for me. When you go to the supper table this evening, I want you to take a bite of bread and butter out of the middle of the slice. Don't get any of the crust, but just get the soft inside of the slice. Then see how long you can chew that. Now you probably think you can chew it just as long as you please but you can't. After a while, and it won't be very long either, you will find that there is nothing in your mouth. You have swallowed that bread and butter and didn't know when you did it. That's the way you ought to chew most foods. You can chew potatoes that way and most cooked vegetables, but not all of them. Then there are some foods you can't chew that way at all, so they will swallow themselves. Unless you get better beefsteak here than we do where I live, you can't chew beefsteak that way, and unless you get better celery here than I do, you can't chew celery that way, because it is stringy and you can't always chew string beans that way unless they are very well unstrung. However, those foods that you can't chew until they swallow themselves, should be chewed until there is no longer any taste to them. Then you can swallow them all right. Now if you would chew your foods that way, it would be a great thing for your teeth and gums, and I am sure you would enjoy it more if you would once get in the habit of eating in that manner and your health would be very much better.

"Now, girls, I am going to talk to the boys a few minutes and you can listen if you want to. How many of you boys ever heard of a game called base ball? Well, I guess most of you know all about base ball. Well, if

you boys want to be good base ball players, or good foot ball players, or good tennis players, or good in any other line of athletics, you have to have good teeth, and you have to use them properly. Now maybe you think that is a funny thing for me to say. But don't you see, that since digestion starts in the mouth, that if you don't have good teeth to chew your food with and don't use your teeth properly you won't have good digestion. Nobody with poor digestion can ever be a good athlete. Did any of you boys ever hear of Connie Mack, or John McGraw? Why of course you have. Connie Mack is manager of the Philadelphia Athletics, the champion base ball team of the world, and John McGraw is manager of the New York Giants, which is the second best team in the world. Well, when the Athletics and Giants report early in the spring for spring practice and to go to the training ground, Connie Mack and John McGraw make them go to the dentist and have their mouths put in order before they can ever begin training. Now, Connie Mack and Johnnie McGraw don't care whether those ball players of theirs are pretty or not, nor they don't care particularly whether those ball players have pain or not, but they do know that if the ball players mouths are not in good condition that they can't play ball as well as they could if their mouths were in good condition. Suppose there was a World Series on and the Athletics had won three games and the Giants had won three games and the next game was to decide the world's championship. And suppose the next morning Baker, of the Athletics, their best batter, were to show up at the ball ground with his face swollen out with an abscessed tooth. He couldn't play base ball that day. Even if he tried he couldn't play well. And his absence from the team might cause the Athletics to lose the world's championship. So you see that to athletes, bad teeth are a great handicap. Connie Mack knows that and that's why he insists that Baker's teeth shall be in good condition and that he shall keep them in good condition all through the playing

season. He knows that Baker wouldn't play as good base ball if he had a mouth full of bad teeth.

"And now you girls. You like your roller skates, and you like to play tennis, and you like to dance, and you like to do a lot of other things that depend a great deal upon the condition of your health. Then you don't want to have indigestion and headaches and all those kind of troubles when you are growing up because they interfere with your school work just as they interfere with the boys school work also. And unless your teeth are in good shape and you use your mouth properly, you will not be in good health. Nobody in school can do their best work and keep up with their studies if they are suffering with tooth-ache, or if they are suffering from indigestion, because of the condition of their mouths. You don't want to fall behind in your classes and have to take a part of the work over again, and yet you can't keep up with your classes unless your health is good and your health can't be good unless your mouth is in good condition. So you see, your health depends a good deal upon the condition of your mouth.

"Now to take up the third reason why you should care for your mouths. You boys may not think now that it makes any difference whether your mouths look good or not, but it does. Pretty soon now, you boys will have to get out in the world and earn your own living. Your fathers and mothers have been pretty good to you so far, but they can't take care of you always, and after a while you have to earn money for yourselves. Then again, later on, perhaps, you will have to be earning money to take care of one of these girls, also. Now, suppose a wholesale merchant in this town wanted a boy to come into his establishment and start way down at the foot of the ladder, with a prospect of working up. It may be the boy could get to be a general manager of the institution after a number of years, or head bookkeeper or some good paying job. Suppose two boys apply for this job. One of them has a mouth full of dirty teeth,

with green scum on them, cavities showing in the front teeth, mouth foul as can be, breath bad on account of his decayed teeth, perhaps one or two teeth gone. The other boy has a mouth that shows that he has taken care of his teeth, that he cleans his mouth, and takes some pride in it. Which one of those two boys will the merchant hire, other things being equal? He'll hire the boy with the clean mouth. He will say to himself, 'This boy with the clean mouth takes some pride in his appearance and is more likely to take pride in his work. This boy with the dirty mouth is very likely to be slovenly about his work.' And then again, the merchant would argue to himself, the boy with the bad mouth is more likely to lose time and neglect his work on account of toothache than the boy with the good mouth. So you see that it does pay you to have good looking mouths, even in business, and it pays you girls, too. Of course, you are more likely to have pride in your looks than the boys are, but from a purely business standpoint you ought to take care of your teeth. If you grow up and have to earn your own livings or want to make a little extra money working in an office or store, you will find that you can get work a good deal quicker if you have nice looking mouths and nice looking teeth, than you can without them. Merchants don't like to hire a girl in their store to sell goods to customers if their mouth is in such shape that their breath is bad and their appearance is bad. Everybody ought to be as handsome as they can in this world, because other people have to look at them and they ought to make it as easy for the other people to look at them as they can. So those are the three reasons why I think you ought to take care of your mouth and teeth, and now having told you all of this about what will happen to you if you don't take care of them, I think I ought to tell you how to take care of them.

"But, first let me tell you how often you ought to clean your mouth. Of course, if you could do it, it would be better for you to clean your mouths everytime you eat



anything, but that isn't always possible. I think, if I were you, I would rinse my mouth out with water the first thing when I get up in the morning. Then after breakfast, I would use my toothbrush and the floss silk in the way that I will describe to you, and then if you don't clean them again until just before you go to bed, you will have done pretty well, anyhow. Always give your mouth a good cleaning just before going to bed. Don't forget that, because it is very important.

“ (Now the lecturer should give a talk on the toilet of the mouth. If stereoptican views could be shown, they can be begun at any point in the talk that the lecturer desires. Personally, I begin showing my stereoptican views as soon as I have wound up my argument for good teeth. That is, just before this talk starts in on telling them how to take care of their mouths.) ”

## CHAPTER V.

### DENTAL EXAMINATION AND CLINIC FOR PUBLIC SCHOOLS.

HISTORY.—OBJECT OF SCHOOL INSPECTION.—HOW TO START  
SCHOOL INSPECTION.—ARGUMENT FOR FREE DENTAL  
CLINICS AND SCHOOL INSPECTION.

Dental examination in public schools consists of inspecting and tabulating the oral conditions of the students, by some dentist under authority of the local dental society or public school authority.

#### HISTORY.

It is of interest to note that in 1879 Russia started this inspection. Chicago, some thirty years ago, was the first city in the United States to have this work. Ann Arbor, Mich., was one of the first cities to make this inspection under the supervision of the school board. Cambridge, in 1907, had the first school dental clinic operated in this country. Nearly all the foreign countries have made great strides in this direction, and America has, at last, awakened to the need of this work. Nearly every state in the Union is now doing some work along this line.

#### OBJECT OF SCHOOL INSPECTION.

The object to be gained by the inspection of the teeth of school children is:

First, to show the people and the parents the actual existing conditions. To tell, for instance, that in New York the examinations show such and such defects, is not as interesting as to show them the conditions in their own children's mouths.

Second, to increase the working capacity of the child.

Third, to accumulate data which will in the future force the people to wake up on this subject.

Fourth, to show, by comparison with schools that have established this system, what can be done.

All statistics of school examinations show that dental lesions are in the majority of all defects, ranging from 80 to 98 per cent.

One of the objections that will arise in the minds of the school board, whether expressed or not, will be that they invariably think that the dentists have some ulterior motive, or that they are ambitious to advance themselves. This, of course, can be met with the fact that the dentist, in many instances, is doing the work free of charge, and, in addition, is furnishing material, charts, and stationery at his own expense. Medical examiners are generally paid a salary or else a fee for some special examinations.

#### HOW TO START DENTAL SCHOOL INSPECTION.

As nearly all schools have some sort of medical examination or supervision, the beginning of dental attention must, of necessity, be done through the medical examiner. It is a good start for the dentist of local society to secure the medical examiner's sympathy and co-operation. Have him visit some dental office and show him by pictures and by examination of a patient what to look for and how to find defects in children's mouths. Mail him reprints from the dental journals on the subject.

In attempting to start dental inspection or clinics in a new place, the dentist often finds a lack of interest or even opposition on the part of the commissioners of education and the teachers. This is humiliating. On the other hand, we have found that physicians do not have to beg the schools to accept their services, but are welcomed, and the necessary funds are forthcoming for their enterprise. It is even necessary sometimes for dentists to beg to put in dental inspection in one school just to

show these men from "Missouri" what can be done. This is the one place where it is better to work first with the medical examiner. Go to him, teach him how to examine for dental defects, and then get him to state in his reports the dental defects which he has found. This will do the authorities more good than forty dentists going before them. After the medical examiner has done this, you have the entering wedge.

When the medical examiner has made his report, the next man to see is the superintendent of the schools, for he is the man who, unless seen first, is going to make objection. Put the facts up to him as given in our chapter on Oral Hygiene. Explain to him that it is not placing a burden on his pupils, but taking a burden off of them. If you can win his co-operation, one-half of the battle is won. Take him along with you to see the president of the board of education, and at a special meeting have a committee along with reliable facts on oral sepsis, and show literature and statistics from other schools which have inaugurated this system. Show them how pupils with dental irritation are unfit for study. Offer to make a voluntary inspection of one school at the opening of the term and at the close of the term. Have prepared blanks somewhat on the order of those shown in this book, and then the next year when it goes before the board of education, meet them on a plain business basis. After you have secured consent for the first examination, see that the parents are acquainted with the conditions of the children's mouths, and that the child is interested through popular lectures in prophylaxis, tooth brushes, and dentifrice. It is also well to have some slides with pointed paragraphs on them or printed cards. Stop in the lecture and write these points on the black-board every few minutes. A break in a lecture like this has a good impression. Statements like the following should be used:

"A Clean Mouth Prevents Pain and Illness."

"Food Left Between Teeth Causes Decay."

“Dirty Mouths Breed Disease Germs.”

“A Clean Tooth Never Decays.”

“Clean Your Teeth After Eating.”

Sometimes it is necessary to use some other attractive schemes to produce results. In Wilksburg, Pa., the dental society devised a plan by which the children were induced to use the tooth brush and dentifrice furnished by the society. With each package, a check was given to the children. Five of these checks would secure a package free. The checks were given out by the teachers for keeping the teeth clean and owning a tooth brush. The reports from the use of such schemes seem to indicate that they are proving their worth; the statistics collected by the dental examiners have been highly satisfactory, and the parents of the children have shown a keen interest in the work.

As evidence of further progression in this work, Dr. A. C. Fones writes me as follows:

“If our plans go through here in Bridgeport, we will start a preventive and educational dental clinic in our public schools in September, and intend to educate dental nurses to put them in one school as a demonstration, and see that the children have a surface treatment once a month.”

Before beginning the school inspection, it is well to have printed the proper charts, the best of which are shown in this book in the following pages. Several adjustable head rests attached to common chairs, can be used for the examination. The examination should be made in a room separate from the class room, and three or four students called out together. It is well to have a trained nurse to attend to the sterilization of the instruments. The assistance of several young dentists, who will generally be glad to give their services, should be arranged. The cards should be given to the students before they reach the examining room, with name and grade filled in. Since we do not have to include in our report all the minor defects which are found, the examination

of about fifty children an hour can be counted on as an average. Specific information should not be given on the card which is sent to the child's parents, as the reputation of the family dentist must be protected for the good of all. The only object of the examination being to let the parents know that they should have either their family dentist, or the school clinician to make further or more extensive examination of the teeth.

After the examination is complete, the popular lectures should be begun and the children and their parents invited. At these lectures the statistics of the examination should be shown, and means of improvement stressed. All the while the first point in this movement is to remove the child's apathy towards the dentist, and to urge the necessity for oral hygiene measures. Get the child so interested that he will insist on the repair of the defects. The dental colleges should be specially instructed to help in this work. In those places where there is no dental college, and where there is not time to establish a dental clinic, the practitioners must give certain hours to this free work for those who cannot pay for it, for, the failure to repair these defects found in the teeth of the children, would result in upsetting all the plans for prophylaxis work in the future.

#### REASONS FOR FREE DENTAL CLINIC AND SCHOOL INSPECTION.

It saves money for the county and state, for much of the expense of teaching goes to laggards, and a large per cent. of the laggards are made so by some physical defect. The largest number of physical defects lies in the teeth. This corrected, the laggards become normal in their class rooms. By putting the laggards through school each year, the school is saved the expense of having to teach the pupils two years the same subject. It has been said that schools expend about twenty per cent. of their income on this kind of double teaching. Another of the greatest drawbacks to successful teaching is from absentees. A large per cent. of absences from school, is from toothache. This remedied, the pupil is more apt

to be regular in attendance, and, consequently, can better concentrate his mind on his studies.

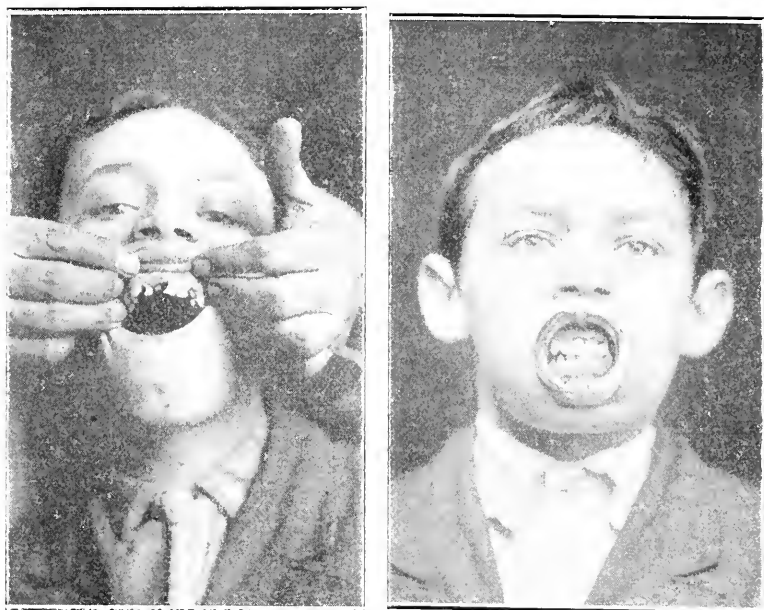


FIG. 6. A ROCHESTER SCHOOL BOY PATIENT OF THE FREE DENTAL DISPENSARIES.

"Handicapped in his school work, health, appearance and ability to secure or hold a position. It is necessary for him to leave school to help support the family. Who wants to employ a boy with a mouth such as this? We remove the handicaps and enable this lad to start even with his associates. This charity does not pauperize the recipient."

Dental inspection in our public schools not only educates the children along these lines, but it also enables us to teach the parents what they can and should do for the younger generation in the way of preventing disease. The laity, being so ignorant on the subject of oral sepsis, should be given every opportunity, and should have impressed on their minds the close relation between these

conditions and the general health. I have requested the privilege of publishing a personal letter from Dr. Zarbaugh. It contains the best argument for our work in the public schools:

TOLEDO, OHIO, Thursday, Oct. 30th, 1913.

DR. ROBIN ADAIR,  
Atlanta, Ga.

My Dear Doctor Adair: Enclosed please find my effort on behalf of the school children of America. I could not speak the volume that is in my heart on this subject, because ours is an empty home, made so by the neglect of someone in allowing a child to return to school who had been ill with scarlet fever, without thoroughly cleaning the mouth.

I have looked into the diseases of childhood pretty thoroughly, and I find that absolutely *nothing* has been offered the medical men in the way of treatment but serumtherapy, and no progress has been made in preventing them, except what we of the Dental profession are able to do in the oral hygiene movement. I believe that it is our greatest field in which to work for humanity.

Ours was a bright, fair, blue-eyed boy 9 years old, sick one week, bid us goodbye after telling us that he was going to heaven, kissed us with a smile on his lips and passed on.

The same tragedy is being enacted in many homes at this very moment, and the sad thing about it, is, that it could have been *and can be prevented*.

Yours very truly,

LYMAN L. ZARBAUGH.

#### IMPORTANCE OF DENTAL INSPECTION OF SCHOOL CHILDREN'S TEETH.

BY LYMAN L. ZARBAUGH, D. D. S., TOLEDO, OHIO.

"If the annual losses to the parents and guardians of the school children of America and to the children themselves were focused into a single line of figures, the result would look like an astronomical calculation.

"According to figures given where inspection of school children's teeth have been made in schools, ninety to ninety-five per cent. have defective teeth.



“Thousands upon thousands of dollars are wasted each year. Untold suffering, great loss of time in school from toothache, mental disturbances, etc., result because of the ignorance of parents regarding their children’s teeth. This suffering and loss of time and money can be stopped very quickly and effectively by the inspection of school children’s teeth by a dentist twice a year.

“To illustrate the loss in dollars, one of the thousands of cases is cited. A child at the age of six years erupts the first permanent molar. Because of faulty development, a small opening between the folds of enamel at the developmental lines allows decay to progress. No amount of brushing or anything else will save that tooth except a properly inserted filling. Now it is perfectly plain that if that child’s teeth are inspected at the beginning and close of the school year, the cavity or defect will be found, and the fault remedied if the parents heed the warning. If, on the other hand, no inspection be held, the tooth continues to decay for a year or more, and the child, after the tooth is nearly ruined, complains of toothache. The dentist is visited. He finds the pulp exposed or putrescent, necessitating tedious treatment and expensive restoration, costing anywhere from five to eight dollars; whereas, if the matter had been brought to the attention of the parent at the start, the cost would not have exceeded one dollar at most, and very likely less, to say nothing of the loss of time, and pain and suffering of the child.

“Dental inspection can be likened to the watchmen in large buildings and factories who make their rounds every hour, pulling the boxes. They are looking for fire. If they find it, the fire department is called and the damage is slight. Just so with dental inspection in schools. The damage to teeth would be very slight indeed. No tooth would decay in six months’ time sufficient to cause any real trouble or suffering.

“The coming generation would never experience

toothache and loss of teeth, if dental inspection in the schools were universal and the warnings heeded. People wearing artificial teeth would be a curiosity in a single generation. If the fathers and mothers knew what it would mean to their children to be free from pain and mental disturbances caused by toothache, they would not only request, but demand dental inspection of the school children's teeth.

"Seventy-five per cent. of all contagious diseases enter the body through the mouth and throat, and untold thousands of dangerous death dealing disease germs lurk in unclean mouths and decayed hollow teeth. Make it a part of the regular school work that the children's teeth be inspected twice during the school year, and that they be taught the vital importance of a clean mouth and its relation to good health and a well-founded education.

"This program, if followed out, will save human lives. It will prevent death from snatching children from their mothers' arms for the reason that the infectious diseases of childhood lurk and grow in the mouths of children many weeks after they have, to all appearances, recovered from a disease. They return to school and play with their mates, and spread disease and death by infecting other children, thus emptying the loving arms of thousands of mothers every year, and instead of them having the God given privilege of watching their children develop into manhood and womanhood, they have now the task of visiting a lonely cemetery and placing flowers on a little green mound, and return to a house that is not a home, but which only contains memories of what might have been, and a mass of ruined hopes.

"Thousands of children die every year because some child who had been sick with a contagious disease, returns to school with a dirty mouth. Fathers and mothers of America, remember this, that dental inspection in our schools, and tooth brushes would be much cheaper than funeral expenses and flowers, and children's laughter

much preferable to empty arms and aching hearts. Which do you prefer? Won't you start a campaign in your locality for dental inspection in your school? The authorities owe it to every child."

## CHAPTER VI.

### FORMS USED IN DENTAL INSPECTION AND CLINICS FOR PUBLIC SCHOOLS.

#### INSTRUCTIONS FOR MAKING SCHOOL EXAMINATION. DISPENSARY.—THE FORSYTH DENTAL INFIRMARY.

Dental inspection and record must precede any attempts towards the establishing of a dental dispensary. The literature and forms as used at Cleveland, Ohio, and Rochester, N. Y., furnish efficient forms, some of which are illustrated.

#### INSTRUCTIONS FOR MAKING DENTAL EXAMINATIONS IN THE CLEVELAND PUBLIC SCHOOLS.

Examiner should work in harmony with the principal of the school and should himself make all arrangements for the examinations with the principal.

Examiner should secure from the principal the use of one table, two chairs, wash basin, hot and cold water, and a suitable place in which to keep his outfit from week to week.

Examiner should see that principal understands the instructions for her teachers, viz: The teacher should insert carbon paper between the first two blanks and then proceed to supply the

School

Date (of examination)

Name (of pupil)

Address (of pupil)

Age Grade Room No.

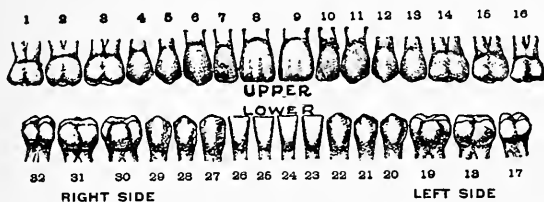
for each pupil. *Always in duplicate*; arranged as the children sit in rows in their class. The children should be supplied to you for examination in the same order in which the blanks have been prepared. Always keep one or more of the children in line but never have to exceed five waiting; one or more dispels fear, too may provoke mirth. The teacher should not detach blanks. The blanks should come to you in pad form. When you have made your record, using same carbon paper as teacher, remove the top sheet giving this original to the pupil, fold over the pad the duplicate and later send same to the secretary of examinations.

## DENTAL EXAMINATION OF SCHOOL CHILDREN, CLEVELAND, OHIO

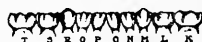
MADE UNDER THE AUSPICES OF

The Cleveland Dental Society, The Ohio State Dental Society and The National Dental Association

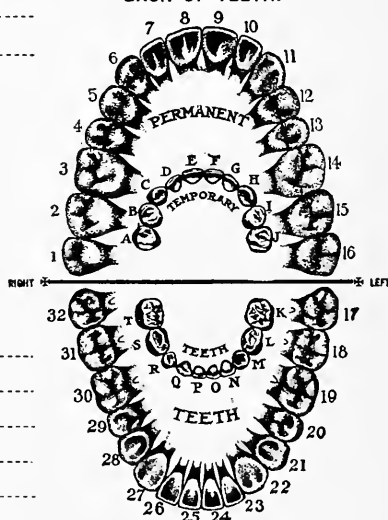
## FRONT OF TEETH.



## FRONT OF TEMPORARY TEETH



## BACK OF TEETH.



## EXPLANATION OF MARKS ON DIAGRAM.

Line through tooth means cavity or cavities.  
 O—Loss of crown.  
 X—Permanent tooth lost.

School .....

Date.....191...

Name .....

Address .....

Age.....Grade.....Room No.....

Condition of Mouth Good Bad

Condition of Gums Good Bad

Use Tooth Brush? Yes No

Teeth Filled? Yes No

Mal-occlusion? Yes No

## REMARKS:

.....

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**TO PARENTS**—A sound body and sound mind are usual and frequent companions. Schools are therefore concerned with both. Neglect in care of the teeth is the cause of so much ill health that school authorities everywhere are seeking co-operation with competent dentists. Our Board of Education has arranged with the local dentists for a free examination of the teeth of all school children. The report on your child is shown above.

This examination and report (though not complete) is not an attempt to interfere with your private matters. They will bring to the majority of the parents first knowledge of the fact that their children's teeth need the attention of a dentist. It is our belief that all parents will be interested in having their regular dentist look after the defects pointed out by this report.

Very truly yours,

W. H. ELSON, Superintendent of Schools.

(OVER)

FIG. 7.

(Back of card for dental examination of school children, Cleveland, O.)

### ABOUT TEETH.

#### GOOD TEETH, GOOD HEALTH.

Without *Good Teeth* there can not be thorough  
MASTICATION.

Without thorough mastication there can not be perfect  
DIGESTION.

Without perfect digestion there can not be proper  
ASSIMILATION.

Without proper assimilation there can not be  
NUTRITION.

Without nutrition there can not be  
HEALTH.

Without health what is  
LIFE?

#### NUMBER OF TEETH.

There are twenty teeth in the first or temporary set—10 upper and 10 lower. In the permanent or second set there are 32 teeth—16 upper and 16 lower.

#### THEIR PURPOSE.

The teeth are for ornamentation, for grinding the food. (thus preparing it for proper digestion), and assistance in talking. They should last to the end of life.

#### How Lost.

By decay and loosening. Decay is caused by allowing food to remain about the teeth and by poor health. Teeth become loose by a deposit on them at the edge of the gum, called tartar.

#### HOW CAN DECAYED TEETH AND DISEASED GUMS BE PREVENTED?

By cleaning the teeth with a tooth brush and water on arising in the morning and before going to bed at night. A quill toothpick properly sharpened, should be used after each meal. A toothpowder used on the brush will assist in cleansing the teeth.

The essential ingredient in all good tooth powders is PRECIPITATED chalk. This may be flavored to suite the taste. The following formula is considered a good one:

Precipitated Chalk .....	3½ ounces.
Pulverized Castile Soap .....	½ “
Garantos .....	1 grain.
Flavor with Oil of Peppermint.	
Sassafras, Wintergreen or Cinnamon...	5 drops.

The slow and thorough chewing of the food helps to preserve the teeth and keep the month in a healthy condition.

Every person should have his teeth examined by a competent dentist several times a year.

Cleanliness is the best guard against disease.

You will find that one hundred examinations will be all that you can care for in one morning of three hours until you have had some experience. There will be sent to each school with examination blanks, four carbon papers so that four teachers may prepare for coming examinations at the same time. These carbon papers should be left by the teacher in the pad of blanks. You will need them for your work. When you have finished examining for the day, be sure to return the four carbon papers to the principal for future use.

Examiner should be prompt in attendance.

Examiner should have his person neat (wear office coat) and above all his hands and nails should be mechanically clean. He should see that his mouth is clean as an example, and his breath should be sweet.

Examiner must not use tobacco when on school property.

Examiner should use a pad of blanks for each room.

Examiner should examine with his back toward a window, that he may have good direct light in the pupil's mouth.

Examiner must keep his hands out of pupil's mouth.

Examiner must *not* use any instrument except a mouth mirror.

Examiner must *not* use a mirror but once until resterilized.

Examiner should see that vessels containing carbolic acid and alcohol are labeled at all times.

Examiner should see that sterilizing is properly done and that mirrors are free from both carbolic acid and alcohol and are at a temperature that will be comfortable to the mouth and not fog the glass. This will necessitate frequent change of hot water in the last glass. *Proper sterilization* of mirrors for this work will consist in : 1st, Washing with a brush, in hot water and soap. 2d, Immersion in carbolic acid solution (as provided which is 1 to 64) for at least five minutes. 3d, Immersion in alcohol (95%) (alcohol must be at least one-half inch deeper than carbolic solution). 4th, Immersion in hot water until used. This water should be changed at least once for every thirty mirrors passed thru it. Mirrors should be used wet and not touched with the hand, napkin or otherwise.

Examiner should always leave his outfit clean and as nearly ready for use as possible. Carbolic acid solution and alcohol should be thrown into sewer at close of day's work.

Examiner must provide: Six (6) mirrors (Ash mirrors may be had for 50c each or 6 for \$2.50, at Ransom and Randolph's.) Three large drinking glasses for alcohol, carbolic acid, and water. Six (6) pencils. Towels for personal use. Soap. Basin

and brush for scrubbing mirrors. One tray to receive soiled mirrors. An assistant to sterilize the mirrors.



FIG. 8. PROPER ARRANGEMENT OF TABLE FOR SCHOOL INSPECTION WORK.

Examiner will be furnished with a card of appointment which he should carry on his person.

Examination blanks, alcohol, carbolic acid, and labels for the same will be furnished and will be delivered to the principal of the school.

The Oral Hygiene Committee will pay assistants at the rate of 50c per half day which means three hours work.

Should examiner be unable to provide an assistant, one will be furnished him upon request.

Do not examine Kindergartens.

Examine 1st grades first, and 8th grades last. Never force a child to submit to examination if parents object. If parents object, so mark his chart and send original home.

If child is afraid have him first see you examine another, after which you will have no trouble.

#### DETAIL OF A DAY'S WORK.

Examiner and his assistant should be at the school at 8:15 A. M. and should at once notify the principal that he will be ready for work at 8:30.

Examiner and his assistant should prepare his table after the fashion shown in the enclosed blue print. Begin work promptly and continue steadily until recess at which time a few minutes relaxation in the fresh air will be found beneficial. After recess resume work until close of morning session.

Have assistant clean and store all utensils properly. Make out your report and wrap with pads of examinations. Pay your assistant; the society will pay you. Have her receipt



for it on your report. Inform your principal of your next appearance and depart. In most convenient manner send your report and blanks to the secretary of Examinations. Should you need any supplies notify Sec'y of Exams at once. Call Main 517.

Examiner should not ask pupil if he has a family dentist.

#### DISPENSARY.

In Chicago, it took six months of constant work to secure the consent and approval of the Department of Health for a Dental Dispensary for children. This, in the face of a free offer of equipment, and means of maintaining it.

One of the first requirements in establishing a dispensary is to eliminate those who are not entitled to free dispensary care. This is accomplished by having the parents of the patient sign a card authorizing the services which is so worded as to eliminate the well-to-do child.

#### DISPENSARY PLAN.

In the carrying forward of the work, various operators may have to handle a case before it is finished. As every dentist has some pet way of doing things, it is first essential to establish and tabulate on printed card a routine series of treatments. Thus the patient can be carried through any treatment with several operators without any hesitation or embarrassment of either operator.

The operation of free clinics for dental service is discussed here solely for the reason that they can be made the greatest factor for oral hygiene teaching. The question has arisen that this part of the work and the great opportunity it affords is often neglected.

Dr. N. S. Hoff has called our attention to the statistics of the various dental clinics criticising the reports because they show such a small number of operations under the head of "cleaning teeth," as compared with other work done. His suggestion is that every patient pre-

**Rochester Dental Society—Free Dental Dispensaries**

○ Clifford, Thomas and Weeger Streets  
School No. 26

☒ Selo St. cor. University Ave.  
School No. 14

☐ 32 S. Washington Street  
Rochester Public Health Asso.

Name Mary Barnes

Address 12 Cypress St.

No. in family 5 Income \$10.00

Employer A. S. Green

Rent \$3.50 W/H

School No. 14

Sent by Wm. A. Engle

Signature of Parent or Guardian Mrs. A. E. Barnes

**ALWAYS BRING THIS CARD WITH YOU**

(over)

Monday	1/29/12		
Tuesday			
Wednesday			
Thursday			
Friday	Jan 19		
Saturday		2 PM	

### PENALTY FOR FALSE REPRESENTATIONS.

SECTION 25, CHAPTER 368, LAWS OF 1899.

Any person who obtains medical or surgical treatment on false representations from any dispensary licensed under the provisions of this act, shall be guilty of a misdemeanor, and on conviction thereof shall be punished by a fine of not less than ten dollars and not more than two hundred and fifty dollars.

(Imprisonment until fine be paid may be imposed. Code Crim. Pro. Section 718.)

FIG. 11. ROCHESTER DISPENSARY CARD.

sent should have his teeth cleaned thoroughly, and should be instructed in oral hygiene. Says Dr. Hoff, in an editorial in the *Dental Dispensary*, August, 1912, "It would seem that nine-tenths of the time and energy of the dentists in charge of these clinics had been expended in relieving the pain of diseased teeth, and repairing the loss of tooth substance. *We are justified in saying that*

# FREE DENTAL DISPENSARY.

85

## ROCHESTER DENTAL SOCIETY -- FREE DENTAL DISPENSARY No. 2 Card of admission on representation or statement of patient.

Name <u>Mary Barnes</u>		Address <u>12 Cypress St.</u>	
Date <u>1/14/12</u>	School <u>No. 14</u>	Grade <u>5<sup>th</sup></u>	Teacher <u>Miss A. Engle</u>
Nativity <u>M. English</u>	Where Born <u>U.S.</u>	Age <u>13</u>	Color <u>White</u>
No. In Family <u>5</u>	Income <u>\$10<sup>00</sup></u>	Rent <u>\$3<sup>50</sup> wk</u>	Medical Attendant <u>Dr. H.T. Jones</u>

Name of Parent or Guardian <u>John W. Barnes</u>		Employer <u>A.S. Green</u>		Certificate? <u>X</u>	
Father <u>Good</u>	Mother <u>Tb.</u>	Applicant <u>Sickly</u>	Mental <u>Normal</u>	No. Teeth <u>28</u>	Defective <u>7</u>
Dentifrice? <u>No</u>	Brush? <u>Yes</u>	Irregular? <u>X</u>	Saliva? <u>All.</u>	Mouth Breather? <u>Yes.</u>	Percent <u>25%..</u>
					Remarks <u>adenoids</u>

This is my 1<sup>st</sup> application to this Dispensary in the year 1912 I have been an applicant to no other Dispensary in the year 1912 (or to the following Dispensaries) General Hospital - Eye Clinic

The foregoing statement is in all respects true;

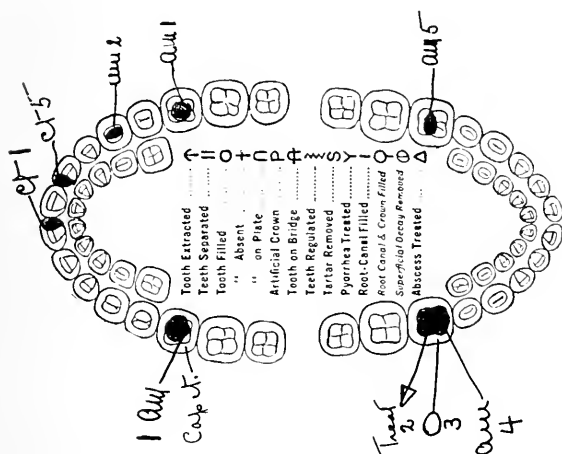
Signature of applicant Mrs. A. E. Barnes

Sent by <u>Miss A. Engle</u>	Address <u>34 White St.</u>	Telephone No. <u>1429 K</u>
Investigated <u>1/16/12</u> <u>Op. (Navy)</u>	Admitted <u>1/19/12</u>	Refused <u>X</u>

TAYMAN & ERBE MFG. CO., ROCHESTER, N. Y. 485821 3M 1-10 J

FIG. 9. CARD OF ADMISSION.



REMARKS

Child presented with dentifrice  
+ instructed in use of same -  
Referred to General Hosp for  
removal adenoids  
Op. 2-7/12

FIG. 10. BACK OF CARD OF ADMISSION.

## RECORD OF EXAMINATION OF THE MOUTH.

(Suggested by Dr. Hunt.)

CUT OF TEETH	School .....
	Date .....
UPPER TEETH.	Name .....
	Address .....
A line drawn	Age ..... Grade.....
through a tooth	(Check one)
means a cavity or	Condition of Mouth    Good   Fair   Bad
cavities.	Abscesses, How Many?.....
O around tooth	Teeth Need Cleaning?   Yes.   No.
means crown is lost.	Use Tooth Brush?   Yes.   No.
	Any Teeth Filled?   Yes.   No.
X across tooth	Malocclusion?   Yes.   No.
means permanent	Remarks .....
tooth lost.	.....
LOWER TEETH.	.....

CARE OF THE MOUTH.—To keep off tartar and have better health, chew every bit of food twice as much as you have been. Clean the teeth every morning before breakfast and at bedtime. The last is *very* important. If you have no other tooth powder you can get a good deal of *precipitated chalk* at the drug store for five cents. The teeth should be brushed by placing them end to end and brushing them in an up and down direction, letting the brush go well up on the gums in both jaws. This should be done on the outer surfaces of all the teeth. Then open the mouth and brush the grinding surfaces hard, being careful to go clear back to the last teeth. Then tilt the brush and scrub the inner surfaces of all the teeth, letting the brush go up on the gums. Then stick out your tongue and brush the top of it. You cannot injure the gums by brushing them up and down. It does them good.

TO PARENTS.—In making this examination for your child at no cost to you, there was no desire to interfere with your private affairs. We are sure you will be glad to know the condition of the mouth. We hope you will take the child to a dentist and have all necessary repairs and cleanings made. It may be the dentist will find other cavities. Our examination was not meant to be thorough as our time was limited.

A healthy mouth means better chewing of food; better chewing of the food means better digestion of it; better digestion means better health; better health means a stronger, abler child, greater freedom from diseases and better school work. Give your child all the chance you mean to grow up healthy and with a good education.

Very truly yours,

SUPERINTENDENT OF SCHOOLS.



FIG. 12. THE RINSING ROOM—STREASBURG DISPENSARY.

*the amount of real hygiene instruction given in these clinics is far short of what it should be, for the expense of money and sacrifice of time put into it by professional men, of course actual repair and relief operations must be made, but the chief aim of these clinics ought to be to impart instruction that will help these children place the proper value on their teeth, and compel them to give some measure of attention in the way of a systematic mouth toilet."*

This view is correct, and it is to be hoped those who have such work in charge will realize the facts, and take advantage of their great opportunity for spreading the gospel of clean teeth.

#### THE NEW FORSYTHE FREE DENTAL INFIRMARY.

The Dental Infirmary erected in Boston, and dedicated to the needs of children is now the model institution for all the world.

The site and building cost half a million dollars, and is endowed with \$1,000,000.00 for its maintenance. It is equipped with the latest and best dental equipment, including a lecture hall for the teaching of oral hygiene to the public. The institution is doing what the trustees started out to accomplish, that is an aid for "A better looking, more perfectly developed race."

Dr. G. W. Clapp, by editorial in the *Dental Digest*, thus discusses the oral conditions in their relation to community hygiene, writes:

"In America we have not yet reached so enlightened a condition; our oral hygiene clinics are mostly conducted as charities by the efforts of a few noble-minded practitioners and the aid they solicit. In the light of experience here and abroad it is probably safe to say that this is neither a just, a wise, or a safe foundation for such enterprises, save in instances like the Forsythe Infirmary, where a great endowment insures permanency and adequate equipment. Community oral hygiene is not

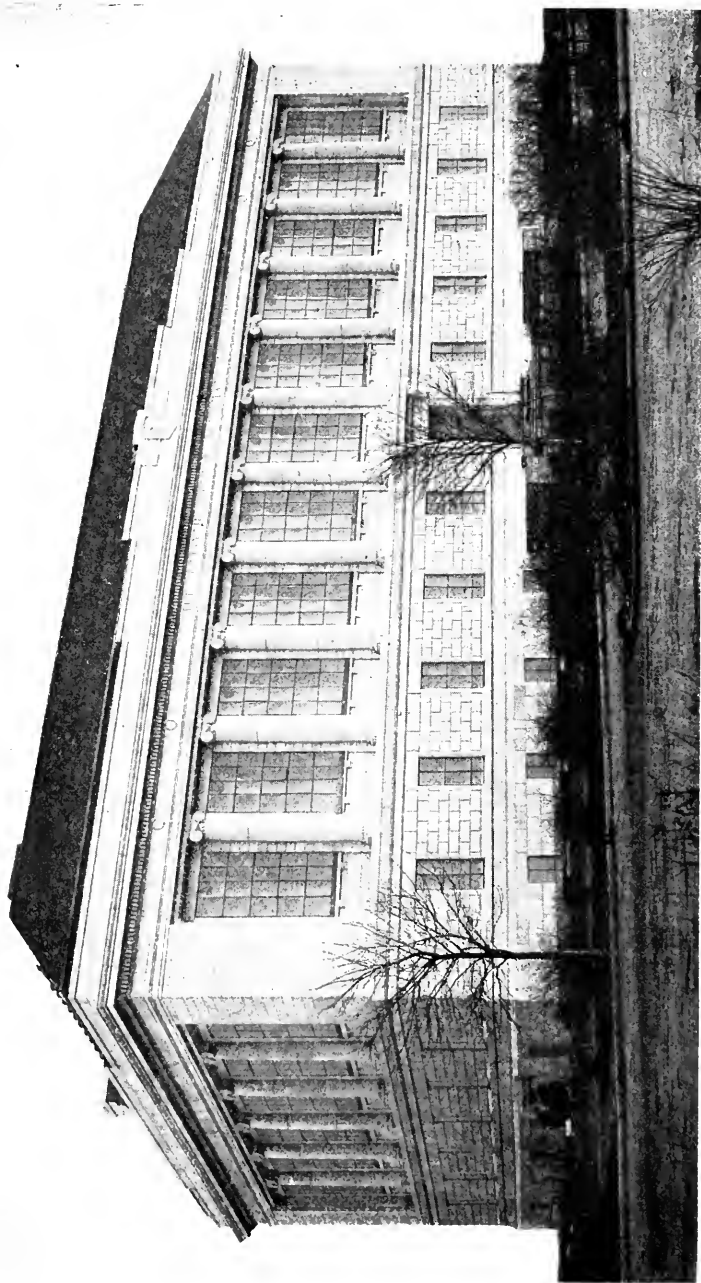


FIG. 13. FORSYTH DENTAL INFIRMARY FOR CHILDREN.

the burden of the dental profession. It may be our duty to prove its merits, to show what it can do for the community and to assist in its establishment by all the means in our power. But to look forward to its permanent conduct by dentists is to insure that it will fail of its greatest usefulness.

“Community oral hygiene is of right a community enterprise. It has more to do with the health of the persons comprising the community, with their economic efficiency and the return which they shall make to the community, than almost any other single measure. In the minds of those who have studied it most, it will prove an economy rather than an expense. It is not impossible that within the childhood of those who benefit by it, it will save its cash cost to the community in freedom from disease, in improved attendance of children at school, in greatly improved mental ability, and in reforming juvenile criminals.”



## CHAPTER VII.

### TUBERCULOSIS AND THE ORAL HYGIENE MOVEMENT.

As has been pointed out again and again, one of the greatest fields of dental work is that of preventive dentistry; from the present trend of medical science, it appears that an important branch of this work in the future will be that of aiding in the fight on the "Great White Plague." Observations have shown me that the vast majority of patients who have contracted tuberculosis, have unclean mouths, and, on the other hand, I believe the patient with the well-cared-for mouth is better able to resist this infection.

The only successful treatment so far, depends on the use of fresh air, plenty of good food, pure water, and rest. The most important of these is proper feeding, and proper feeding depends on proper mastication. Complete and proper mastication cannot be accomplished unless the patient's mouth is in a healthy condition. Ulcerated teeth, flowing pus from pockets, exposed pulps in teeth, and two-thirds of the teeth out of the jaw or out of service, will not give the proper nutrition even from the purest foods obtainable.

The pure air of a pine forest, passing through a septic mouth, is no better than the air of a crowded tenement.

Statistics show that fully seventy per cent. of school children have enlarged glands. This means either a form of tuberculosis or else a predisposition towards that disease. A large per cent. of these cannot have other than dental entrance for these poisons, for most of them have open root canals. This has been demonstrated before the German Surgical Society by the process of inoculating the pulps of children's teeth.

In the crusade against the "Great White Plague," there is not enough stress being laid on the question of oral sepsis as a causative factor for this disease, nor is importance enough attached to its worth towards a cure of these patients. This matter should be brought to the attention of the heads of the various institutions which treat tubercular conditions, and also the authorities who control the charity institutions. It is our duty to convince these people of the great benefits that dentistry can accomplish for those under their care.

A few years ago, the writer became interested in a free dental clinic for the "Anti-Tuberculosis Society" of Atlanta, which was operating a free medical clinic. He brought the matter before the Medical Society, and then the Dental Society, finally securing the equipment for running the clinic. At first the members of the Atlanta Dental Society took up the work at stated intervals. At the present time the Society has a regular clinician of stated salary to do this work. Reports show a great number of filling operations with a very small per cent. of oral hygiene treatments. This criticism, of course, applies not only to this clinic, but to all others of this kind that have come under the writer's investigation. Not long ago Dr. Hoff criticised a report of a similar case in like manner. I hope that in the future, those who have these institutions under management, will bear in mind that the stressing of oral hygiene is of more practical value than dental restoration to the patients. This is not meant to discourage dental work, but it should be, undoubtedly, made secondary, while it is at present primary. Every patient who presents for dental attention, should have his mouth thoroughly saturated with some solution. The clinician should not examine the patient's mouth until this has been done. Each one of these patients should have his teeth cleaned up and treated with Iodine solutions until oral sepsis conditions are cured. Not only this, but every one of them should be instructed in the use of the tooth

brush, and made to show improvement in mouth conditions. The method adopted in reference to tooth brushes in Atlanta is to buy seconds from the tooth brush manufacturers, and sell them to the patients at cost.

In clinics, which I have visited, I noticed that in the medical room there are always charts and pictures, showing the patients what and how to eat, and how to take care of themselves. In the dental clinic a like method should teach them how and why they should keep their mouths clean. It is now known that more trouble comes from septic mouths than from dental caries. I have frequently noticed that these septic mouths do not present as large an amount of caries as do mouths under normal conditions. Cards should be distributed in the dental clinic, calling attention to the importance of this fact, also cards explaining the proper use of tooth brush, and dentifrice cream, should be given to the patient. If this take all of the time of the clinician, then the dental colleges and other clinics of like nature would be only too glad to get the regular dental work to do. It takes an expert to handle the oral hygiene part of the work at this kind of clinic. If our dentists could only see the matter in this light, and quit paying all their attention to filling teeth, I believe that the medical men would soon rally to the cause and place in every institution dentists to do this kind of work. While there are medical authorities who recognize, to the fullest extent, the importance of this matter, not until it is generally recognized will the condition improve as it should.

Drs. Weidmann and Lubowski say:

“There is no disease in which healthy and clean conditions of the mouth are of such vital importance as in tuberculosis of the lungs. Tubercle bacilli are found in carious cavities, and it has been proved that especially unclean portions of the mouth constitute a portal of entrance for the tubercular poison. Partsch, of Breslau, reports a case of grave tuberculosis caused by a carious tooth with such acute inflammation of the lymphatic ves-

sels that an operation became necessary. Also many cases of tuberculous infection by way of the alveoli have been reported. These and the authors' own observations leave no doubt as to the fact that dental caries is responsible for many cases of tuberculosis. Tuberculous tumors situated opposite carious teeth resist every treatment until the carious teeth are filled or extracted. Long-established lymphatic swellings also will generally not yield until the carious teeth are treated. All the generous efforts of charitable and public institutions for the cure or prevention of tuberculosis are of no avail unless the causes of the disease are removed, and among the most dangerous causes are beyond doubt defective teeth and unhygienic oral conditions which exist especially in children."

S. Adolph Knoph, Professor of Phthisio-Therapy at the New York Post Graduate Medical School and Hospital, of New York, writes:

"It must be said to the glory of the American achievements that dental science, the art of preserving the teeth by truly scientific method, had its birth in this country. While we physicians have gone to Europe to complete our education, the European dentist comes to America to learn the best and latest in his profession. The latest and most glorious development of the American dental science is dental hygiene, for dental hygiene means prevention and preservation, and these bear the closest relation to the prevention of tuberculosis.

"One of the earliest and very frequent symptoms of tuberculosis is impaired digestion. While I do not wish to say that bad teeth constitute the only cause of digestive disturbance, if bad teeth are present, they are a factor contributing to this pathogenic condition. Ulcerated teeth may give entrance into the bone of tubercle bacilli that have been accidentally inhaled or have been contracted by secondary infection."

Prof. Fisher, of Yale, is authority for the statement that, "Seventy-two Americans die every hour from pre-

ventable diseases.” Counting this up for a year, we are amazed at the glaring fact of this needless mortality which we have here in our country. Enough people might be saved each year to populate a city the size of Baltimore, and the further fact is that at any time these deaths may come near to our own doors. A large per cent. of these deaths come from dental origin, and makes it necessary for the dental profession to “sit up and take notice.”

Drs. W. G. Ebersole and Marshall have declared that decay of the teeth is *the most prevalent disease of civilization*, and that there are thousands of invalids who are such because of faulty oral conditions. They also believe that all the medical treatment in Christendom could not cure them. It is not for the dental profession nor the medical profession to claim the whole field for the work, and, even together, we can hardly make a successful fight unless the sympathies of the people are gained, and they work with us against the great common foe—the “Preventable Diseases.”

## CHAPTER VIII.

### BRUSHING THE TEETH.

SHAPE OF THE BRUSH.—TEACHING THE TECHNIQUE OF BRUSHING THE TEETH.—THE DIRECTION CARD.—THE BAD BREATH SIGNAL.—LIME WATER AS A MOUTH WASH.

Tooth brush handles at the present time are made of bone, purchased from the Chicago Stock Yards. The best grade handles are made from the thigh, and the cheaper ones are made from the shin and buttocks bone. The back is grooved, holes are drilled, and then wire is drawn through, pulling the bristles into place. The grooves are then filled with cement.

The best bristles come from Russia, India, and Germany. They are washed, bleached, cut into proper size, selected, and graded. In one tooth brush factory, I am informed, that some of the graders have been employed for twenty years at the same work.

#### SHAPE OF BRUSH.

As to the shape of the brush, we have every variety described, from the sway-backed brush to its opposite, the curved handled brush in the so-called "Prophylactic Tooth Brush." In shape they vary from the largest, as prescribed by Dr. D. D. Smith, to the smallest one, described by Dr. Jules J. Sarrazin, of New Orleans. In texture, they range from the softest brush, prescribed by the author, to the stiffest brush, prescribed by many of the leaders of the profession. Each dentist has some peculiar idea upon the shape and size of the brush, but this will have little bearing upon the subject as to cleaning the teeth.

#### TEACHING THE TECHNIQUE OF BRUSHING THE TEETH.

There is, however, one point upon which they will all agree, and that is the training of the patient into the

proper brushing of the teeth. It is surprising to note the ignorance of our best patients upon the handling of the tooth brush. It is even more surprising to note how few dentists take any time to train these patients. I have made it a point to inquire always of new patients whether or not their former dentists taught them to use the tooth brush properly. Very seldom do they answer in the affirmative. However, asking the question, in most cases, is superfluous. The appearance of the teeth tells us all that we want to know.

It is a good idea to have brushes in the office for sale to our patients, for, if we give them a prescription, they go to the drug store, and do not always get the proper brush, and we do not have the chance of teaching them to brush the teeth properly. It is a good idea to buy the best brushes obtainable, by the gross, and allow the office assistant to handle the sale of them. Incidentally, there might be added all the articles for the proper toilet of the mouth, such as floss silk, dentifrice, and mouth wash. People do not buy brushes enough. They will use them until they are worn almost to the handle. Such a brush is not only laden with germs of all kinds, but it is absolutely worse than nothing with which to brush the teeth. Such a brush is always shedding its bristles, which stick between the teeth and cause great irritation.

Dr. C. Edmund Kells, of New Orleans, was the first man to give me the idea of having "Direction Cards" for brushing the teeth, for "distribution among the patients when the brush is sold to them." A modification of the Kells card, as used by myself, is here shown. If we give the patient these directions orally, he soon forgets, but if we give them to him on a printed card, it is impressed on his mind.

Some years ago, I had a patient, an elderly lady, for whom I did a great deal of work. When the work was finished I explained to her that, at her age, she could not expect the work to last as it should unless she brushed her teeth properly. At this time, I did not keep brushes

for sale in the office, and told her to go to the drug store and purchase a certain kind of tooth brush and to brush her teeth correctly. Some months later, I received a long distance telephone message that the work had entirely given out, and that her mouth was in a terrible and painful condition. An engagement was made. On her arrival, I found that the condition was about as she had said. Of course, she had been brushing her teeth, "just as you told me, Doctor." She was rather wrathful. Arrangements were made for the patient to come next day, and bring her brush with her. The next day she returned, and I had her to brush her teeth for me. She brushed the teeth as well as I or anybody else could have done it, but, if she had been taught for a month, she could not have evaded more skilfully the very places which she needed to brush, that is, the gingival margin of the gums. This led me to the valuable idea of never saying, "brush the teeth," but rather say, "brush the gums," for if they brush the gums in a proper manner, the teeth will get a thorough brushing.

In demonstrating the brushing to the patient, there are several methods which may be employed. The one advocated and used by Dr. Edmund Kells, and Dr. R. B. Adair, is that of having a full artificial denture, and demonstrating to the patient by brushing this model. However, I find it more efficient to have the patient hold a hand mirror, and watch me brush their own teeth in the proper manner. A peculiar fact is, however, that, while you are brushing the patient's teeth, and trying to show him what you are doing, his eyes are over the edge of the glass or off to one side, anywhere except on the mirror. You will have to look in the glass as well as at the teeth. They will tell you, "Yes, I understand, I see," when they are not seeing at all. Be careful about this point, and make them see. When you have finished the demonstration, give them a brush, and make them go over it themselves. I sometimes have the patient hold the brush



while I grasp their fingers in order to make them go through the proper manipulations.

I remember one patient, a prominent physician in an adjoining state, who I had remain for a week, visiting my office daily, taking some six or seven lessons before he had mastered the technique of brushing his teeth. It is a lamentable fact that so few people possess enough manual dexterity to touch all the surfaces of their teeth.

Personally, I believe in a soft grade of tooth brush, for the reason that the gums are massaged with the sides of the bristles; should this be done with a stiff bristle brush, it would do considerable damage, that is, if the patient carried out my instructions. Again, I know that a soft bristle brush is sufficient to clean and polish the surfaces of the teeth. I know, that whenever I want to polish anything on my lathe, I use wheels of fine texture, and, that whenever I want to grind or cut into the surface, I use a stiff brush. In the mouth I have but one idea, and that is to clean and polish, and not injure any structure.

I demonstrated in my office to several dentists—advocates of the hard tooth brush—by cleaning the teeth of a patient in the following manner: on one side, I cleaned with a camel's hair brush, while on the other side I used a medium stiff brush. The debris was cleaned off, if anything, better on the side where the camel's hair brush was used, and, on the side where the stiff brush was used, the gums were in a bleeding condition.

Dr. Arthur Black says, "I have seen very few cases only two of which I have made definite record, in which the gum septa have been inflamed by the use of a too stiff tooth-brush. In both cases, there was marked improvement promptly following the change to a softer brush."

Dr. M. L. Fletcher insists that his patients use a hard brush, and, in addition, that the teeth be scrubbed, claiming that in addition to cleansing the teeth, the connective tissue is developed to a high degree in them. This, he

says, has the same effect on the teeth and gums as the mastication of hay, twigs, and rough food has on the gums of animals. Dr. Fletcher, some time ago, suggested that corn meal was as good a cleanser for the teeth as was needed, claiming that it has sufficient cleansing power without injury to the gums. He also objects to dentifrices that contain soap, claiming that they cause the tooth brush to slip over the tarter and food without removing them. On the contrary, Dr. N. S. Jenkins claims that this is the most important thing for a properly prepared dentifrice.

It is reasonable to believe that before the deposit of tarter takes place, there must be some cementing substance to hold it in place—some agglutinating material; thus, if we fail to brush our teeth one day, this material accumulates on the teeth, and forms the beginning of carious deposits, with the result that from this one day's lack of brushing a rough surface is left for the beginning of an accumulation. We see how important it is to train our patients to know that an irregular system of brushing the teeth fails, and that for brushing the teeth, to be successful, it must be regular and systematic, with no skips in between. After the material has accumulated on the teeth for a few days, it is impossible for the patient to remove the deposits, and he must report to the dentist.

Dr. Francis says, "Some mouths, so far as the tooth brush is concerned, are unexplored caverns of miniature type, and, others which receive an occasional visit from the intrusive explorer, are not in a very much better condition for the little care bestowed upon them."

Expressions as the one just cited should urge us to the utmost to bring about a change of thought in the minds of our patients toward the cleanliness of their mouths. This training of patients to brush their teeth properly is one of the hardest and most thankless things that the dentist has to do.

## THE DIRECTION CARD.

In former years, before I used the printed "direction cards," much time was spent in training the patients. When at a subsequent sitting, if asked to demonstrate how they were brushing their teeth, they would do almost the opposite from what had been told them. The patients way you told me."

often replied with the expression, "Now that is just the

## DIRECTIONS FOR THE PROPER CARE OF THE TEETH.

Upon *Rising* the teeth and gums should be most carefully, thoroughly, and *Correctly Brushed*—using a soft grade tooth brush and \_\_\_\_\_.

After *Breakfast*, waxed floss silk should be passed between the teeth (be careful not to snap it down hard upon the gums, as this would injure them) or a quill tooth pick should be used—never use a wood tooth pick.

After *Dinner* or luncheon, when possible, waxed floss silk or a quill tooth pick should be used and the mouth most thoroughly washed with \_\_\_\_\_, if convenient—otherwise with plain water.

After *Supper* repeat the above.

Just before *Retiring*, the teeth should be again thoroughly and *Correctly* brushed with \_\_\_\_\_ and the mouth thoroughly rinsed with \_\_\_\_\_.

Don't brush across—brush the under teeth up and the upper teeth down—brush hard—you cannot injure the teeth or gums: the gums will soon become hard, firm and healthy.

For foul breath nothing equals the pleasant odor, taste, and antiseptic qualities of \_\_\_\_\_, which should be used in good, big mouthfuls and retained as long as possible. Keep the teeth shut and alternately distend and draw in the cheeks, forcing the fluid between the teeth.

Nothing short of the above constitutes good care of the teeth.  
(Tack this card above tooth brush holder).

FIG. 14. THE DENTIST'S FAVORITE DENTIFRICE AND MOUTH WASH IS  
TO BE INSERTED IN BLANKS.

Now, after training the patients, a card containing condensed directions for the care of their teeth is given. They are requested to preserve this card. The patients

will get a better idea from seeing the suggestion in print. Then when they claim, "just as you showed me," you have all the advantage by using another direction card. Dr. Kells was the first to suggest to me the advantages of this method. All dentists should have printed some card giving their directions. It saves time, does good, and costs little.

On the direction card illustrated, note carefully the word "Correctly," and the technique which is given; if this is carried out it will remove the debris from the teeth, and give a better massage effect to the gums than any other method with which I have experimented. This results in the bristles going into the interstitial spaces.

The manner in which most people brush their teeth resembles the way in which the small boy shines his shoes on Sunday morning. He shines the tips all right, but, if left to himself, he never touches the heels. People will brush their front teeth, but they never get to the back ones.

In brushing the teeth, we should begin at some definite point, such as, for example, the upper right buccal surfaces. The brush is placed with the bristles pointing straight up, the side of the brush against the gums. A rotary tilting motion revolves the bristles, using the hands as an axis, and thus forcing the bristles between the teeth. The brush is next moved around to the front, and then the left buccal surfaces. Then, in order, brush the palatal and lingual sides of the teeth with the same position of the brush, high upon the arch, and turned outwards, bringing the bristles down between the teeth. Then the occlusal surface of the molar teeth is given careful attention. For more detailed direction for brushing the teeth see Dr. Corley's outline lecture.

Dr. Fones states that the tooth brush be made to travel as fast as the hand can be made to go, and he gives another useful point in brushing the inner surfaces of the lower teeth, which is, to have the patient hold the thumb on the top of the handle instead of around it.



FIG. 15. SHOWING IMPORTANT TOOTH BRUSH MOVEMENTS.

The brush is now placed in the right side in just the reverse manner. On the lower jaw, it is just the reverse as on the upper. Here, the bristles point straight down, and the long side of the brush is against the gums. We now bring pressure, and rotate the brush upwards. The same technique is brought out around the circle of the teeth, but when we come to the lingual sides of the lower jaw teeth, we have to change our technique. Here, the brush has to be pressed between the tongue and the molar teeth. The molars should be brushed with an in and out movement, as the rotary movement would be of no use on account of not being able to get the brush below the gum margin. The lingual surfaces of the lower incisors is brushed by inserting the brush as far down as possible, and bringing it out with an upward movement. We must caution the patient against brushing across the cuspids for fear they will cut grooves.

We mean when we say, "A clean tooth will not decay," that the pabulum on which germ life will feed has been removed, or rendered inert.

Dr. A. E. Peck gives the following suggestions for the patient to use:

"Impress them with the importance of removing all deposits of food or other material which would form a good culture ground for dangerous germs. These deposits under the margin of the gums can be removed by the patient with a properly shaped stick and an abrasive.

"The Tongue Scraper, Massage Stick, and Polish will assist materially in this work. With this stick they can keep the tobacco stains from their teeth, and prevent many plaques from forming. The mother can use this stick on the teeth of the children who are too young to come to the dentist. She can help keep their mouths clean and healthy, and at the same time educate them to the importance of having their teeth attended to. It will familiarize them with having others work on their teeth, and when they do come to the dentist they

will be much more easily handled, and better results will be obtained.



FIG. 16. THE CARE OF THE TONGUE IS OFTEN NEGLECTED. SOME SIMPLE APPLIANCE AS ABOVE, PROPERLY USED, IS A GREAT AID TOWARDS A CLEAN MOUTH.

“The value of the tongue scraper was recognized by the Chinese many years ago, and a jeweled tongue spoon was a part of their toilet requisites. The removal of the disintegrated mucus from between the papillae of the tongue eliminates from the body a fine culture ground for all kinds of bacteria. The tongue scraper should be used soon after rising each morning.”

#### THE BAD BREATH SIGNAL.

How often on the street corner, on the car, in the church pew, at the social function, and in the dental chair have we been annoyed by having to associate with those individuals who suffer from bad breath. As the possessor of the bad breath is not aware of its odor, he, conse-

quently, does not know that he is so afflicted, and it does seem that he always wants to get up close to your face to talk. Strange to say, some of these very people carry out to the best of their ability and knowledge the ordinary rules of mouth hygiene, and yet this condition continues to exist.

This is a very delicate matter to mention, and yet, there is no one so well placed as the dentist to help in this respect. The subject of foul breath should not be discussed with these patients, for they are very sensitive on the subject. However, in a tactful manner of speech, we can train them into a more accurate system of flossing the teeth, and can suggest their taking up a system of Prophylaxis. If we do this, we can work out to our satisfaction the cure of this defect.

Dr. Geo. M. Niles, a Gastro-Intestinal specialist, has written a valuable paper on the subject of, "The Bad Breath: What it Portends." Some extracts from this paper give us valuable information on this subject.

"When the personal odor is offensive, it is a great misfortune; if preventable, it is an inexcusable disgrace.

"In the ordinary intercourse between individuals, the exhaled breath generally constitutes the most noticeable odor, and it is to that phase of the subject this study is mainly directed.

"Every one of my readers can probably call to mind one or more acquaintances, who, except for an abominable breath, would be attractive; but from the presence of this handicap, are avoided, perhaps disliked.

"A busy dental surgeon, of this city, who has offices in the same building with a rectal specialist, recently informed me that, on comparing notes, they both decided that the dentist, in his daily routine, encountered more offensive and septic cavities than did the latter in his rectal work.

"The mouth, as the portal of entry for food and air, warm and moist, with numerous nooks and crannies, where stray particles of food and other debris may furnish an inviting field for countless micro-organisms, is by far the most fruitful source of bad breath. Among other causes in and adjoining the mouth, besides carious teeth, pyorrhea alveolaris, tartar, septic gums, glossitis or stomatitis, may be mentioned necrosis of the nasal bones, purulent hypertrophic or atrophic



rhinitis, ozena, septic tonsilitis, or even squamous-celled carcinoma of the mouth or tongue.

"After all is said, however, it must be admitted that we occasionally see a patient in whom no adequate cause can be found, but who, nevertheless, labors under this misfortune. Though it is possible that such may be due to some lamentable personal idiosyncrasy, we should be slow to admit such a contingency. In these rare cases a persistent search will sometimes disclose a putrefying impaction in some almost inaccessible recess in the mouth, where neither toothbrush nor dentifrice can penetrate. A dentist of experience of this city, stated to me that a breath of surprising foulness could be produced by one small impaction of this sort—so small as to be discovered only after patient search.

"Successful management by the physician or dental surgeon will afford such relief from embarrassment to the patient and annoyance to friends, that well may the emancipated sufferers 'rise up and call him blessed.'"

While most cases of foul breath are due to mouth conditions of the patient, it may come in some degree from constipation or intestinal intoxication. Generally, in uncomplicated cases, the taking of some purgative medicine, as one teaspoonfull of epsom salts, before breakfast, for a week or ten days together with larger quantity of water, will help this condition.

#### LIME WATER AS A MOUTH WASH.

The number, kinds, and styles of dentifrice and mouth wash formulae are legion. It is not the intention of the writer to enter into a discussion of their relative merits, except to say that it is not so much which *brand* is used as the *way* in which it is used.

As many of our prominent dentists have become such strong advocates to the use of lime water for a mouth wash, the method of its preparation will be given.

Dr. Kells, of New Orleans, was one of the first advocates of lime water as a mouth wash. As the proper quality of lime is rather hard for the patients to secure, he keeps this put up in two-ounce bottles for supplying his patients. His idea is that if the patient uses a pro-

prietary mouth wash in as large quantities as he prescribes, it would be too expensive for them.

Noticing that Dr. Fones, of Bridgeport, Connecticut, also recommends lime water, I asked him to give his opinion relative to the recent publication of Pickerill, who claims that all alkaline mouth washes prevent a free flow of saliva, and, as the saliva is the best mouth wash possible, the use of lime water does not have the desired effect. My personal experience was that it always left a furred feeling instead of a cleanly one.

In answer to these queries, Dr. Fones wrote me, and I quote at length:

“The reason why I am such an advocate of lime water for a mouth wash is that it is such a powerful, yet harmless, solvent for the mucilagenous accumulations around the necks of the teeth, as well as their proximal surfaces.

“Kirk has found by scientific experiments that it is one of the best solvents for plaques and gummy accretions of the teeth that has come under his observation. Its alkiline reaction does not especially enter into the subject in consideration of its merit. If you will secure the coarse lime, which is a very light cream color, and prepare it in the following manner, I am sure you will not have any furry effect in your mouth, but one of extreme cleanliness.

“Place a half cup of the unslacked lime in an empty quart bottle, and then fill with cold water. Thoroughly shake and allow the lime to settle. Pour down the sink all the water you can without losing any of the lime, as this first mixture contains the washings of the lime. Again fill with cold water and shake, and when this has settled pour off some of the clear water in a ten or twelve ounce bottle for use at the bowl and again fill the quart bottle with cold water, shake and set aside for future use. This operation may be repeated until five or six quarts of the mouth wash has been used. If the lime water is a trifle strong at the start, dilute that in the

small bottle with water. After rinsing the mouth with the lime water (and the rinsing should be of sufficient length of time to thoroughly foam it), rinse the mouth with clear warm water. I have yet to find anything to beat it."

## CHAPTER IX.

### CLEANING THE TEETH.

SKILL REQUIRED FOR THE WORK.—THE BEST TIME TO CLEAN  
THE PATIENT'S TEETH.—THE USE OF A DISCLOSING  
SOLUTION.—INSTRUMENTS USED FOR CLEANING  
THE TEETH.—ABRASIVE MIXTURES TO BE USED  
IN CLEANING THE TEETH.

Under the term, "Cleaning the Teeth," will be described the operative measures employed at the dental chair for removing deposits, bacterial plaques, and stains from the average mouth. This term does not give sufficient dignity to the work, and all investigators who work along this line will be glad for a better term. None has been forthcoming, and, as all our patients know what we mean when we use this term, it is one which we will more often be forced to use with them. If our clientele understand "Removing Infection," or "Prophylaxis Treatment," then these terms can better be employed.

It seems rather a strange coincidence that a few years ago, the dentist who "cleaned teeth," was in danger of losing his club and social standing, but within the last few years, the importance of this procedure has so impressed itself upon the patients that the man who does not clean the teeth of his patients, or have it done, is looked upon as one either behind the times or failing in his legitimate duty to his patients. There was a time when our profession would put in beautiful fillings, and send the patients away with a clean bill of health, although the free margin of the gums exhibited rings of calcareous deposits. It was not many years ago that the patient would not pay, or rather was not required to pay, more than from one to three dollars for this operative procedure. Many of the laity were accustomed to having, as the Indians express it, the cleaning put in as

“potlash,” that is, where any work was done, the cleaning was added free of charge. In view of this state of affairs, it is not to be wondered at that there was so little cleaning of the teeth done by the dentists. It was also a deplorable fact that our colleges paid little heed to this subject, and many graduates, during their college days, never saw a mouth properly cleaned up by their professor or demonstrator. If the college did any of this work, it was relegated to the freshmen.

#### SKILL REQUIRED FOR THIS WORK.

From the belief that any one can clean a set of teeth, we are now learning that this operation requires most expert ability, and thorough knowledge of anatomical landmarks, as well as medical treatment for pathological conditions. Generally, the placing of fillings is mere routine work, but the more teeth we clean, and the more mouths we put in a healthy condition, the more we realize that greater skill is required here than in any other line of work which we do. We have learned that the average patient cannot maintain *clean* teeth, and that they will have to have our professional assistance along this line. We have also learned that this work is of immense value to the patients, and that it is worthy of a reasonable compensation which will enable us to pay more attention to the matter.

To secure a clean set of teeth—one that would be so considered by a specialist in prophylaxis—is one of the most difficult procedures in dentistry. It behooves us to put just as much time on this work as practicable, or, in the event the patient is one who will appreciate this service, as much time should be given him as would accomplish the proper cleansing of the teeth.

#### THE BEST TIME TO CLEAN THE PATIENT'S TEETH.

A surgeon would not dare perform any operation without first making some attempt at cleaning and steri-

lizing the field of operation, but the dental surgeons absolutely ignore these rules of surgical procedure. I do not think that any dental operation should be undertaken until the teeth have first been properly cleaned. This should be done as routine work. There are many advantages resultant from this procedure. In the first place, it puts the cleaning operation on a higher plane than if it were done when the regular dental work is finished. In the second place, it enables us to bring forward the salient points of oral hygiene to the patients. In the third place, it protects the dentist from any infection, should any of these germs be absorbed through a break of the skin in his hands. In the fourth place, it prevents him from having the possible infection of hay fever, la grippe, and tuberculosis, for, if the mouth be properly cleaned out, the danger of infection from this source will be reduced to a minimum. In the fifth place, there is no doubt in my mind that if the mouth is properly cleaned out before the work is done, crowns and bridges will stay and last longer. There are many other reasons that I could enumerate, but these are enough to impress the matter on the mind of the dentist. Again, I would like to repeat, "Clean or have cleaned every set of teeth before you operate."

Right here comes the question, "Who shall do this work?" Some of us have dental nurses in our offices, and to them is intrusted this work. I have seen better work done along this line by them than by many dentists. If you can train up an assistant to do this work, well and good.

The methods employed in cleaning the teeth are many and varied. Whatever method is employed, let us be sure that the patient's gums and lips are not torn up with the instruments or the floss silk. All of us have seen patients with their mouths so sore that they could not brush their teeth for a day or two, or even chew their food properly, following the simple operation of cleaning

the teeth. There is no need for any great physical force to be exerted in the operation.

#### THE USE OF A DISCLOSING SOLUTION.

In beginning, it is well to spray the mouth with a solution containing aromatic spirits of ammonia, diluted three times with water. This removes the viscosity of the saliva, and removes all decomposed particles of food. It is a strong cleanser, and has a pleasant effect. We now paint the teeth with some staining solution, the best of which is Skinners' Disclosing Solution.

#### FORMULA FOR 1 OZ. DISCLOSING SOLUTION.

Iodine (crystals) .....	grs. 50
Potassium Iodide .....	grs. 15
Zinc Iodide .....	grs. 15
Glycerin .....	drs. 4
Aqua .....	drs. 4
Mix. Sig. paint teeth (one or two at a time) and rinse immediately with water.	

Put up in glass stopper bottle.

In making it, put the iodine, zinc, and potassium iodide into a mortar with five or ten drops of glycerin. Grind to a thick syrup, and then pour all you can into the bottle. Pour the remaining glycerin into the mortar, and stir with a pestle. Pour out again, then add water, and stir again. In this way you can get all the solids out of the mortar, whereas, if the solids and liquids were all put in at once, some of the iodine would stick to the mortar, and an inferior staining solution would be the result. This solution shows up the bacterial plaques, and aids in removing them.

#### INSTRUMENTS USED FOR CLEANING TEETH.

There are many and varied instruments in the market for removing calculus, and with most of them you can obtain good results. It is a question of personal equa-

tion. I would caution you to select, and use the smaller instruments. Many colleges have on their required instrument list, scalers which suggest plows, rather than dental instruments. The writer has for years been an advocate of the Good-Younger instruments for this work, for the reason that they can be used either "push" or "pull," and, being small and rounded on the back, do not injure the tissue; they are rights and lefts and can be used in a double ended handle, simplifying operating a great deal.

The students should be taught that pyorrhea work is on the same principal as cleaning the teeth, and, if they hope to operate for pyorrhea, they must become adept in cleaning teeth. With this thought in view, let me urge that much care be taken in the use of whatever instruments are selected for this work.

It takes a separate set of instruments for this work, and for the pyorrhea work, for here we do not wish the instruments to be sharp. It is advisable to round off the sharp edges of the set intended for cleaning the teeth. Much injury can be done to the peridental membrane if its attachment is separated at the gingival border. Use a chip blower, or a strong current from the compressed air syringe, and blow at the gingival margin, thus forcing the margin of the gums away. This enables the operator to see the small patches of infection or deposit which have been previously stained by the solution. The assistant can so manipulate the air syringe as to be of great aid to the operating dentist. Now, as in pyorrhea work, to be skillful, one must brace his fingers on the teeth, so that no slip of the instrument can occur. The number 15 is used for removing deposits on the anterior teeth, while the numbers 3 and 4, right and left, are used for removing material from the posterior teeth. The small blade of the instrument should be run completely around the free margin of the gums, for we have found this to be the starting point of many pathological conditions of the gums. It does no more harm to carefully



clean out this free margin than it does to clean out the finger nails. In fact, one of the tests that I make of new instruments is to run them under my thumb nail, and, if it cleans the cuticle there without injury, it will do to use on the free margin of the gum.

After the instrumentation has been done, the next procedure is the use of waxed dental floss silk between the teeth. The usual round dental floss will not give the desired results. You must have a flat floss to do the work properly. It must also be as large as can be forced between the teeth. On this floss we use an abrasive consistent with the amount of infection which is to be removed. If the spaces between the teeth are large, and considerable debris is to be removed, then we may use an abrasive containing flour of pumice. On the other hand, if the patient's mouth is in fairly good condition, we need not use such an abrasive powder, but use a chalk mixture or one of the formulas which I am giving at the end of this chapter. There is one caution to be borne in mind, and that is, in using large size silk, place the thread between the teeth, and then place on whatever abrasive is to be used. If we placed the abrasive between the teeth, and then attempt to pass the silk, we would find it almost impossible to do so, and, even if it did go, one half of the floss silk would be cut in two.

It is not necessary to saw the gums or the cheek with the silk, nor is it necessary to fill the mouth with the abrasive material. The smallest amount is all that is necessary. The silk should be passed thoroughly between all the teeth and threaded under whatever bridges the patient may wear. When this is done, the patient's mouth must be thoroughly rinsed out with a syringe, or sprayed with compressed air, and then some mild anti-septic mouth wash used.

We are now ready to cleanse the bodies or the crowns of the teeth. If you have the skill, and the time, there is no better method than the orange wood stick and dry pumice flour, but, while this is the ideal method in pro-

phylaxis, for the simple cleansing of the teeth, most of us will use the dental engine. There are many and varied devices at our command for use on the engine in our hand piece. Possibly, you have adopted the bristle brush as being the most efficient; nothing has yet been found equal to the brush wheel for polishing. We should have one right angle hand piece set aside for this work. Surely, everybody has an old right angle that can be dedicated to this work. I have never been able to do this class of work with a straight angle hand piece, and any one who has used a right angle for cleaning teeth with a bristle brush, will never use a straight one again. Formerly, I had a great deal of trouble with my right angle in this

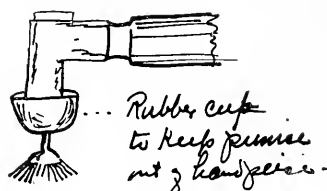


FIG. 17.

work, because of the abrasive getting into it, but now I use the Consolidated Dental Mfg. Co's., right angle, which completely closes at the back, and by inserting a rubber cup on backwards, I can keep the abrasive out of the mechanism. Needless to say, a fresh brush is furnished to every patient. However, I can see no objection to these brushes being saved, and, at the end of the week, being cleansed by boiling for fifteen or twenty minutes, and used in future operations.

These inverted bristles can be had in a stiff grade, which are black, and in a soft grade, which are white, also in camel's hair brushes. The unmounted kind are the ones used in right angle hand piece, using the shortest right angle mandrel.

With the sharpened orange wood stick, place around

the teeth the abrasive, and with the dental engine run at a low rate of speed, carefully go over all surfaces of the teeth, giving the hand piece a motion from the gum toward the cutting or grinding surface of the teeth. The mouth is again washed out, and the staining solution applied as at first. If there is any debris, bacterial plaques, or calculus still remaining, this staining solution will immediately show them up.

Now comes one of the most important parts of the operation—the careful removal from under the free margin of the gums all trace of the abrasive that has been used. It takes force to remove this material, and calls for the highest pressure which we can put on the air or water syringe. We must bear in mind that this abrasive has sharp edges, and, if left under the gum margin, may cause irritation or pyorrheal conditions. The mouth should then be rinsed out with cold water, and, as a finishing touch, I advise that some lotion as Holmes' Fragrant Frostilla be applied to the lips, which have necessarily had much unpleasant stretching. When this technique is carried out, and the proper dental toilet explained, the patient is delighted and is usually willing to pay liberally for the services rendered.

#### ABRASIVE MIXTURES TO BE USED IN CLEANING THE TEETH.

Ordinary powdered pumice can be mixed with either tincture iodine, alcohol, or peroxide of hydrogen. The iodine stains, the alcohol is the best antiseptic, while the peroxide is good to remove green stains.

To a teaspoonfull of pumice can be added about ten drops aromatic sulphuric acid. This is splendid for tobacco stains.

The above should only be used where the teeth are in a bad condition.

Flour of pumice is much finer, and should be substituted for the regular pumice, if possible. It can be mixed with any of the above drugs.

If the teeth are in a fair condition, it is best to make a teaspoonfull of any good dentifrice or tooth paste, and incorporate with it a small quantity of flour of pumice.

Any of the above can be used either with dental engine or hand cleaning with porte polisher.

## PART II.

PRACTICAL ORAL PROPHYLAXIS



## CHAPTER X.

### ORAL PROPHYLAXIS.

DEFINITION AND VIEWS OF SMITH, SPALDING, FLETCHER,  
FOXES, TAYLOR, RHEIN AND HARPER.

It was some years ago at a meeting of the National Dental Association, in Washington, that I first heard any thing definite on oral prophylaxis, and became interested in this subject. At this time it was my pleasure to listen to a paper read by Dr. D. D. Smith, of Philadelphia, and, a few days afterwards, to meet him personally in his office. This meeting changed my entire method of conducting practice, and led me into the channels of prophylaxis. While it is true that this subject of oral hygiene, prophylactic treatment and prophylaxis has been brought up in various meetings, there is no doubt that Dr. Smith was the first dentist to advocate a *systematic* treatment along this line. His first paper was read October 18th, 1898. According to his own statement, this paper excited no interest among the dentists themselves. Some years later, by inviting dentists to visit his office, and exhibiting a large number of patients to whom he had been giving this treatment, he convinced many of the leaders of the profession that this was really a new departure. It was interesting to note, that while many were interested, and went home to put the idea into practice, many criticised him severely. In Washington, it was said that they did not need any one from Philadelphia to teach them to clean teeth. Another one, supposed to be a teacher in a dental college, said that it was a great craze. Many said that it would polish away the enamel. Some said that a tooth held against a brush

wheel was in time worn away, and that this would be the way with teeth under prophylactic treatment.

Dr. Smith's plan of frequent treatment was based on the fact that tooth decay begins at a vulnerable point on the outside, and proceeds inward along the tubuli. It mattered not to him whether this disease was caused by lactic acid. He contended that the decay of teeth depended upon our care exercised over environmental conditions. To him the place of decay or the resting place of the bacterial plaques was to be forcibly removed. This being done, we have changed the tooth conditions from bad to good, and have removed the means by which decay and disease gain a foothold.

In answer to the question, "What is Prophylaxis Treatment?" there can be no better answer than that written by the originator of this systematic treatment.

"The treatment consists of enforced radical and systematic change of environment of the teeth and perfect sanitation for all organs of the mouth. Experience having demonstrated that the most careful and painstaking are unable, with the agents commonly employed—as the tooth brush and dentifrice, tooth pick and dental floss, soaps, so-called germicidal washes or other agencies—to effect this end, the plan of forcible, frequently renewed sanitation by an experienced operator has been found indispensable. In detail, oral prophylaxis consists of most careful and complete removal of all concretions, calcic deposits, semisolids, bacterial plaques and inspissated secretions and excretions which gather on the surface of the teeth, between them, or at the gum margins; this operation should be followed by thorough polishing of all tooth surfaces by hand methods (power polishers should never be used), not alone the more exposed labial and buccal surfaces, but the lingual, palatal and proximal surfaces as well, using for this purpose orange wood points in suitable holders, charged with finely-ground pumice stone as a polishing material. Treated in this



manner the teeth are placed in the most favorable condition to prevent and repel septic accumulations and deposits, and not less to aid all efforts of the patient in the direction of cleanliness and sanitation."

To my idea nothing short of the above meets the requirements of prophylaxis.

Dr. E. B. Spalding in a paper before the Michigan Dental Society said:

"One, two or three treatments does not constitute prophylaxis. It is the constant watching, guarding and maintaining the mouth in a condition of health which constitutes oral prophylaxis."

Another definition by Dr. M. H. Fletcher is as follows:

"The name *prophylaxis* means preventive as you know, and is the work that should be done by the patient in cleansing the mouth. When a surgeon removes a foreign body from the eye or treats a wound in any manner he calls it by its proper name, viz., surgical treatment. When a dentist treats the disease of the mouth, he is not doing preventive work, but surgical work, just as any other surgeon does, and I think the dental profession should rise to the occasion, and prove to the medical world as well as to the laity that they are scientific men. This can only be done by using the proper terms to describe the locations and pathology. This will indicate that they know what they are doing."

Dr. Fones calls prophylaxis, "the ideal service to the patient."

In as much as the terms *oral hygiene*, *prophylactic treatment*, and *prophylaxis* have caused so much misunderstanding, it is not to be wondered at that this work has not found its way into the general routine of more dental offices. Granting that all we have said about oral hygiene, even if this is practiced to the fullest extent, it still remains that we must imbibe some of the spirit and

intent of prophylaxis to carry out the treatment as it should be carried out. It is a lamentable fact that so few dentists in the United States do this work in a systematic way. In 1911, I made a tour of most of the large cities of the United States, and, after hearing numerous papers, seeing exhibits at societies, and reading a mass of magazine articles on this subject, I realized that little had been done in the carrying out of systematic work along this line, and few had imbibed the true spirit of preventive dentistry. On June 21st, 1911, I read a paper before the Florida State Dental Society upon the subject, "Introduction of Oral Hygiene into a Dental Practice." In this paper I gave some interesting correspondence contributing to the historical data of the subject of oral prophylaxis. This paper was published in the *Dental Summary* in December, 1911. I quote at length:

"Several years ago the dental profession was confronted by the fact that one of its members, a competent dentist, a social favorite, a refined and cultured gentleman, had been blacklisted from membership in a swell social club for no other reason than that he "cleaned teeth." Nor was this stigma on prophylaxis confined to the laity. Dentists seemed to think it beneath their dignity to clean teeth, and, if it must be done, it was relegated to the assistant. Others tell us that it takes a crank to work prophylaxis. Dr. Levi C. Taylor, of Hartford, wrote me on February 7th, 1905, 'I find upon investigation that it (prophylactic) means a medicine or medical treatment, the word being very old in this connection. Dr. M. L. Rhein took exception to this, and claimed it to be a word taken from the name of a tooth brush in 1882. Prophylaxis came into use in the sixties, and was defined by Donaldson, in 1874, very much as I defined it at your meeting, 'Surgical or manipulative treatment for the preservation of teeth. That both are a treatment no one will deny, but I do believe that each has a distinct meaning. Men and women both belong to the human family,

but who would think of using the words interchangeably as meaning one and the same thing?’

“Dr. M. L. Rhein wrote me a letter in June, 1905, in which he said, ‘I don’t believe it makes any difference whether you use the word as an adjective or a noun; what I said in Washington, was that I was the first person to introduce the word into dental nomenclature when I introduced the prophylactic brush in 1883, and, having first made use of the word in that sense, I thought its very use, by virtue of priority, entitled it to be used in this way.’

“Dr. D. D. Smith wrote me on June 10th, 1905, as follows, ‘Dr. Rhein is entitled to no credit for original work in this matter. He never heard of it or thought of it until I published my paper in 1898. *Prophylactic* refers to a remedy and should be used adjectively. The word prophylaxis is never used as an adjective but as a noun, the name of a process. *Prophylaxis* is not a preventive remedy, but a preventive process. You will find these terms used interchangeably in the dental nurse paper, and without any discrimination.’

“On June 18th, 1905, Dr. Rhein again wrote me; ‘Not one patient out of five hundred would understand your purport, although they may declare they do. I find it necessary to impress these truths upon them again and again to make them understand. I don’t care a rap about what I call this treatment to my patients. I believe that what they can understand most plainly is the term to use, therefore, I never say prophylactic treatment or prophylaxis to them. Plain English is the best thing to use at all times with a layman. Therefore, I tell them that the cleaning and polishing of their teeth, and massaging of their gums, done frequently, is the best preventive treatment that we have in dentistry. It is all very well to use these words professionally, but plain English is the best thing for our patients.’

“Dr. Taylor, in discussing the name says, ‘Dr. Harper suggested that *prophylactic* was a noun derived from the

Latin. So far he is right, but he does not go far enough. It is both a noun and an adjective, and has been applied to medicine for more than two hundred years. What does *prophylaxis* mean? It is of Greek origin, derived from a verb that means to stand guard before. There should be a distinct meaning to our words, and *prophylaxis* I would define as the surgical and manipulative treatment for the preservation of health, and many physicians, with Webster, define *prophylactic* as a noun and an adjective, meaning a medicine which preserves or defends against disease, and the same definition is given in the Standard Dictionary. *Prophylaxis* is a noun, meaning the art of guarding against, preventing disease, observance of the rules necessary to preserve health, preventive treatment. I believe the essayist intended to convey to us the meaning of what I would term *Prophylaxis*, the surgical or manipulative treatment for the preservation of health, and not the rinsing of the mouth from time to time with medicine in the expectation of establishing the health of the mouth. I criticised his use of the term, as I believe he means *prophylaxis* when he says *prophylactic*.'

"Dr. Harper says, '*Prophylaxis* is derived from the Greek; I did not say it came from the Latin, I said distinctly that *ic*, *al*, and *ary* are Latin suffixes, and that *prophylactic* is the adjective form which means pertaining to, belonging to, or consisting or prophylaxis. Take the word *atmospheric*, which means pertaining to the atmosphere. You use the adjective form with the *ic* suffix, because you indicate something that pertains to atmosphere; also *hygenic*, as relating to hygiene. The word *prophylactic* is the adjective form which is used in referring to the noun *prophylaxis*. *Prophylaxis* is strictly the adjective form with the *ic* termination. At most, even if used as a noun, as in calling certain medicines or washes *prophylactics*, it is still, strictly speaking, an adjective qualifying the medicine or wash as to its uses and purposes, and referring to *prophylaxis*.'

“Leaving each individual to take his choice between these opposite opinions, and omitting any and all special methods of treatment, I shall at once introduce my subject by the statement which I believe will be generally accepted, that nearly all our dental operations are necessitated by unclean and infected mouths. Then is it not strange that we, as dentists, have failed to keep those mouths clean? Is it not strange that we have treated this abscess, filled this tooth, operated for disease of the gums, but still think it beneath us to clean the mouth and keep it thus so as to prevent these operations? I know there are many here who will say that they have practiced *cleaning* all their professional lives and that these things will happen anyway. But the fact remains that a thorough search has been made of all available dental literature, and no mention of systematic prophylactic treatment was made up to 1898. About this year two prominent dentists began to investigate those infected mouths, and to publish their views and results. Still few dentists took up the work. In public exhibitions the actual results were shown by submitting patients who had been under prophylactic treatment. Some were enthused and wrote of what they saw, but so little progress was made that the originators nearly gave up hope, and, as one of them expressed it, ‘went home tired, despondent, and with the feeling that he had done his best, and, that as the dental profession had repudiated his work, he would make no further effort.’

“But they kept at it, and evolved a system of prophylaxis founded on correct etiologic principles. The results accomplished have forced us to realize the wonderful development there is in store along this line, and we now see the dental journals teeming with some new phase in every issue.

“In the past, our work has been the repair of diseased tissues; our studies in etiology yielded no practical results. Dentists of the future must study and practice

etiology and prevention. Until our present views on oral prophylaxis were accepted and understood, etiology was the subject about which dental authors wrote volumes and spun theories that now seem ridiculous when we meet them in reading.

“Detail would make this paper too long, and I shall confine myself to facts which have been well established.

“1st, That the etiology for the larger per cent. of dental operations is traceable to local infection.

“2d, That tooth decay is from without, and caused by constant contact with infectious material.

“3d, That simple gingivitis, Riggs Disease, and enlarged glands, are rarely traceable to constitutional causes, as urema, or syphilis, but generally to an infected mouth.

“If you accept these well established truths, I can expect your interest in the remaining part of this discussion. The medical profession has just emerged from a transformation of its methods from *all treatment to prevention and sanitation*. For instance, instead of giving all their time to the treatment of malaria, medical men now turn to the cause, and, by sanitary measures, seek the death of mosquitoes. The up-to-date physician now watches the surroundings of his patients to prevent typhoid fever. He takes all precautions to prevent small pox, scarlet fever, and diphtheria. ‘To cure is the voice of the past, to prevent is the Divine whisper of today.’

“Dr. M. L. Rhein, of New York, and Dr. D. D. Smith, of Philadelphia, both believe alike that this is the most important part of a dentist’s work, but they have differed decidedly as to how to put the work into execution. Dr. Rhein claims that all patients should be given the benefit of Prophylaxis, but that if he did the work himself, he would have little time for anything else. The charge for the treatment would be a burden for the patient to pay at the rate of \$5.00 to \$15.00 per hour for twelve treatments each year. He contends that the work is not so

difficult, but that an assistant can soon learn to do it, and he has introduced to us the dental nurse, whose duty it is to perform this work for patients at a nominal charge. Dr. Smith, on the other hand, won't agree to any of Dr. Rhein's ideas, and contends that prophylaxis is the most difficult thing that the dentist can be called upon to perform. Inasmuch as it is the best thing that a dentist can do for his patients, and takes a great amount of skill, the patients should not go into the hands of an assistant, but that he must do the work himself and charge accordingly."

## CHAPTER XI.

### WHY IS PROPHYLAXIS NECESSARY?

WHERE TO BEGIN PROPHYLAXIS.—FREQUENCY OF TREATMENT.  
OBJECT OF PROPHYLAXIS.

One question which will frequently be asked us is, "Why is prophylaxis necessary today when all these years up to the present time cleaning the teeth once a year was thought to be all that was necessary?"

If you will go back a few generations, you will find conditions very different from those of the present day. In the first place, even those who lived in the cities lived more of an outdoor life. The strenuous life of the modern business man was then unknown. The time for a meal was of much longer duration. In addition to this, the culinary art had not reached its present high state of development. Cooks in our time seem to have for their chief object the preparation of foods for absorption through the intestines, and to dispense, as it were, with the duties of the stomach. They seem also to strive to prepare the food in as sticky a manner as possible. In this day and time, if food were put on the table which would require a proper amount of mastication, we would think that something was surely wrong, our cook would think it an insult to our table, and that such food should be run through the meat chopper. It is a rare opportunity when one of us makes a meal of such food that the teeth get to perform their real duties, that is, tearing, rending and grinding.

The interproximal spaces in our mouths which were intended to be closed up, are now wide open to receive this sticky food. While we have this sticky mass adhering to the surfaces of the teeth, it constitutes the best pabulum for the growth of the numerous bacteria which are always in the mouth.



Disuse of any organ or of any part of the body results in the atrophy of that part. Take for example the wide alveolar process with teeth embedded in thick periodontal membrane, that our forefathers had. They were capable of much greater chewing action than are the teeth of our present day with the thin periodontal membrane surrounding the teeth. And then we have that modern abnormality—the narrow arches and irregular teeth—making it necessary to carry out the most careful oral hygiene in order to keep the teeth free from sticky, doughy, tenacious foods. Also the teeth in our present day are submitted to various deleterious influences in the way of food and drink condiments which are strong enough to etch a marble slab, and these are followed by an ice cold drink or steaming cup of coffee. Thus we see that cleaning the teeth was not so necessary with our forefathers as it is with us on account of the high degree of civilization, with its consequent dental degeneracy, to which we have attained. We might say that modern prophylaxis is to counteract this self occasioned loss. In other words, we have to do by cleaning the teeth, and prophylaxis treatment, what used to be done by nature. The great number of tooth manufacturing houses throughout the land points to the necessity of finding some way by which this great loss of such important organs as the teeth can be checked.

The medical profession has for years advanced along the lines of preventive or prophylactic treatment. The prevention of small pox has been insured by vaccination. We have recognized the fact that the best work of our medical men is along the lines of sanitation. We have welcomed the preventive measures in our army for the checking of malaria and typhoid fever, and while all these are being constantly brought before our eyes, dentists not quick to accept the simple truths which are continually in their sight, are still making crowns, fillings, and bridges for these broken down teeth, and are not recog-

nizing that the crown of these teeth is not so important as the root, and the peridental membrane surrounding it. When we realize the nature and cause of all these diseased conditions, and when a system of preventing it is at our hands, the neglect seems criminal.

#### WHERE TO BEGIN PROPHYLAXIS.

Our patients seem to think that decay in childrens' teeth is just a normal condition, for how often will a parent when told of the decay in a molar tooth say, "O that is only a temporary tooth," and seem no more to mind it than they would a bump on the face, when we know that the decay is serious because of its bearing on the future condition of the child's teeth

In the first part of the book we have learned the startling facts of what accumulation on the teeth leads to, and the logical reason why a systematic removal should be instituted. Dentists should be willing to give more of their time to this work.

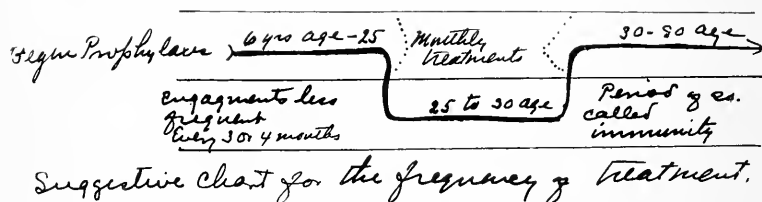


FIG. 18.

The necessity for and frequency of prophylaxis treatment may be illustrated by what I term the Age Curve. What is meant is, that children at the age of six years should be placed upon a regular and systematic prophylactic treatment for it is here that the care of the dentist is most needed. In my practice I have been astonished at the needless loss of sixth year molars. It is for this reason that I say the most important time for

prophylaxis is with children at the age of six years, for at this time we can have better control over the patients, and suggest to them habits which will lead them into proper hygiene rules. We can thus have the opportunity, at the proper time, of extracting the temporary teeth so that the permanent teeth will erupt at the proper places. This will save the parents much orthodontic expense, and save these teeth from the very start. At this time the children learn the proper oral hygiene, and dental toilet habits; later, as they are having to go to school or to work, there will not be a good opportunity of getting these ideas instilled into their minds. From the age of twenty-five to thirty-five, there is a period of comparative immunity, and I would not think that such frequent prophylaxis treatment should be necessary. After this time some of the work that was done in former years begins to fail, and the rush of business or social life makes great demands on the vitality, so that more frequent treatments will probably be necessary. From thirty-five to old age, more stress should be laid on prophylaxis.

In children the main thing we have to combat is dental caries. I have heard many a dentist tell children that meat eating is the cause of these decays. If Prof. Miller's experiments are correct, he has proved that meat eating is not the cause of such decays. I believe that we should encourage the children to eat meat, and, what is more important, to leave off sticky foods. On the other hand, it is just as true that as the child grows older, these remains of meat left between the teeth become more dangerous on account of their tendency to cause pyorrhea. From twenty-five on, we are not looking so much to have to prevent caries, for as we have said, there seems to be a form of immunity to caries at this time, but the greatest trouble will come from some infection or disease of the peridental membrane, and we must look with all care towards saving this membrane in its integrity. Meat

impactions, and decomposition, cause much distress and disease of the gum margin. The reason for this is that as the patient grows older (as in all other parts of the body) the alveolar process begins to undergo a senile change. In the first place the animal matter becomes less, the bone begins to solidify, and the blood vessels to get smaller. The haversian canal can hardly be found. These changes give food debris a greater opportunity to irritate and infect the gums.

It was once argued by some of the medical profession that the dentists did a great wrong when they tried to preserve a man's teeth after he had passed the age of fifty, for, said the essayist on the subject, "It is nature's plan to lessen the amount of food for the senile stomach." They claimed that if the dentists kept the teeth of the old people up to the standard that this would enable them to eat as when young, and that many of the ills to which old people were subject were caused solely by their being able to carry on active mastication.

Dentists, and especially those engaged in prophylaxis, now stand ready to refute this from every point. Of course, if the patient is one who has a very septic mouth, has bridge work which will not be kept clean, and toxin is generated around this, the medical man has some justification for his belief that the patient named be better off without any teeth at all, but we have found that the old man on prophylaxis receives just as great benefits as the young person. This system will not only maintain oral cleanliness, but prevent, to some extent, the atrophy of the ligament attachment of the teeth. Old people who are on this treatment are very enthusiastic, and as free from general constitutional troubles as it is possible for them to be.

#### FREQUENCY OF TREATMENT.

In conclusion, children should be treated at least once a month, and persons from twenty-five to forty-five,

about once in three months. From forty-five on the treatment should be given once a month.

Frequently dentists on viewing the mouths of regular prophylaxis patients in my office, have expressed the thought that it did not seem necessary for teeth so clean and in such good condition to have further treatment. This is the key note of the whole situation. It would be simply oral hygiene to clean the teeth, but here we have something deeper. The patients on prophylaxis come to us not for cleaning, but for the results in the true meaning of prophylaxis—the guarding of the oral cavities from the entrance of infection which would in any way get into the teeth and mouth. In prophylaxis, we pre-suppose that all adhesions have been removed, that the treatment will be directed to those places which the patients themselves cannot reach, and all tendency towards any pathological condition has been eradicated.

#### OBJECT OF PROPHYLAXIS

The claim of Smith, that the peridental membrane is of more importance than the crown of the tooth, has been borne out by investigation of the origin of pyorrhea, and the quicker this is recognized, and the quicker we diagnose any inflammation at the gingival margin of the peridental membrane, the more certain we will be of freeing our patient from any possible danger. There is some doubt whether there is ever a reattachment of the pericemental fibres after they have once been detached by disease. This emphasized the necessity of prophylaxis as a preventive of pyorrhea.

We have learned that the caries of the teeth are dependent for the most part upon two formations, the carbohydrates and micro-organisms. As neither of these factors can be eliminated, all that we can do is to learn as much as possible how to hold either or both of these elements in check. Unfortunately, the very articles of which

we eat most freely, that is, pastry, candy, etc., give the largest percentage of carbohydrate and acid units.

As it is difficult at the present time to control the matter of diet the object of prophylaxis should be to eliminate as far as possible the effects, and certainly the first question to be taken up is that of *logibility*. Thus we find that those substances which are either alkaline or neutral in effect are chocolate, biscuit, milk, dates, etc., while substances such as potatoes, lemons, pine apples, nuts and meats, being originally acid in reaction, are beneficial.

The conclusions which are reached by Pickerill after considerable experiments along this line are:

“That in order to prevent the retention of fermentable carbohydrates on and between the teeth, and so eliminate or very considerably reduce the carbohydrate factor in the proportion of caries, starches and sugars should on no account ever be eaten alone, but should in all cases either be combined with a substance having a distinctly acid taste, or they should be followed by such substances as have been shown to have an ‘alkaline potential,’ and the best of these are, undoubtedly, the natural organic acids found in fruit and vegetable.”

Those races where comparative immunity from decay is found, undoubtedly produce the result by the constant use of salivary stimulants producing in the salivary glands a constant activity which prevents stagnation in the oral cavities, and thus preventing pre-disposition to decay.

Several references have been made heretofore to the softness and stickiness of our foods which, lodging between the teeth, give a start towards caries. The child's taste is a guide which, instead of giving heed to, we have always sought to ignore. The child naturally calls for the articles of diet having an acid reaction, fruits, salads, candies, etc. The harm does not come to the child's teeth from these substances, but from the form in which they

are eaten—sticky, doughy cake for example, sticks between the teeth and stays for future decomposition. I have no doubt that candy in the pure state is not only non-detrimental, but of great food value, and a preventer of decay. Dr. S. A. Visanska, a pediatricist of Atlanta, read a paper before the Georgia State Dental Society, in which he said:

“From time immemorial it has been handed down to us as an axiomatic decree that the eating of candy or other sweets does have a direct effect on the teeth causing rapid decay and thereby preventing the proper grinding of food and eventually causing stomach or intestinal troubles with all the myriad dangers attendant on malnutrition.

“I have considered carefully what candy eating really does for the teeth, and apart from the hard stick candy which might injure the cutting surfaces of the teeth, or the tough chewing candy which might have a similar effect by dulling the surfaces exposed to it, it does not seem probable to me that further injury could be done to the hard enamel by actual contact with sweets. We have been told, however, that often the solution of sugar or glucose of which the average candy is made, causes a process of fermentation which results in lactic acid and that this acid does attack the enamel and acts directly upon it thus causing decay by injuring this hard surface and hence exposing the dentine, which is, in turn, similarly attacked until at last the vital structure of the tooth is reached.

“But now let us see what actually happens when glucose or sugar does ferment in the mouth. If the sugar or glucose is held in the mouth long enough at the normal temperature of the mouth which is 98.6 degrees this fermentation will produce  $C O_2$  and alcohol, and later acetic acid. Now alcohol is really a preservative and therefore  $C O_2$  must be the dangerous element. But can this be true? As a matter of fact there is absolutely no evidence in support of the destructive quality of carbon-dioxide and even if this apparently harmless gas could effect the teeth there is still another reason why its dangers are minimized. We all know that after eating sweets we get very thirsty and usually take water immediately, thus diluting the sugar which may remain in the mouth. The reason for this thirst is that sugar has so great an affinity for water that as soon as it reaches the stomach water is taken up by a process of dialysis through the walls of the stomach and Nature to compensate for this demand and the consequent deficiency of fluid, demands water through the mouth. The result is that the ample washing of the mouth after eating sugar would seem to point to yet another reason against the theory of tooth decay from contact.

“It has also been determined by testing with litmus paper that in

from one to six hours after eating sweets the influence of this acid, even if it should be harmful, had disappeared for there is no trace of it in the mouth within the period of time mentioned. Acetic acid, however, does not have any effect on the enamel, this I have proven by actual test.

"Lactic acid in appreciable quantities will attack the enamel of the teeth causing a jelly-like substance to form thereon. But the lactic acid foods, such as butter-milk as well as many of the present day foods which are prepared from lactone ingredients are too weak in lactic acid to have any direct effect.

"The effect of a solution of lactic acid of the proportion of one dram to the ounce, when applied to a tooth I have proven by direct experiment.

"Of course I know there are many stomach troubles which might result in acid formation in the mouth which directly injure the teeth and such conditions might possibly result from excess of sweets in the stomach or from other dietetic indiscretions—but that contact in the mouth with even the excessive quantities of sweets which the normal child craves, does not appeal to me as a logical reason for decayed teeth."

These facts are borne out by later day experimentation in the examinations for defects in the child's teeth. We may well consider the food, and lunches furnished to the children as a probable cause for these defects, in that most of the meals are made up of salivary depressants. Added to this fact, we must remember that the debris stays around the teeth, and between them until the next meal. The child's prophylaxis should begin by recommending to the child or his parents the addition of more fruit to his diet, and that this fruit be eaten, not before the meal, but after it in order that the salivary glands may become excited, and remain so until the debris is rendered soluble or washed away by the flow of saliva. We, as dentists, formerly thought that salads and condiments were very detrimental to our patients' teeth. However, used in the right way, there can be no detrimental action.

Tea is one of the salivary depressants, and should not be given to children at all; if our grown up patients use it, we should insist that they do not end a meal with this drink, but use it in the first part of the meal, for, used in the later part of the meal or with the desert, it stops



the flow of saliva for some time, allowing the micro-organisms of the mouth to multiply at a great rapidity. Some one has said that were lemonade drunk as a universal beverage it would be impossible to have typhoid fever. This alone is a recommendation for this most excellent beverage, but, when we couple to this, the fact that fruit acid is one of the greatest salivary stimulants, we should not fail to take advantage of its beneficial qualities.

All this leads us to the fact that the aid we secure from nature in the prevention of caries, must be through increasing the activity of the nerves leading to, and having control of, the salivary glands. These being brought to their highest development, we have a prophylactic fluid far superior to any thing that can be made artificially. We can accomplish by mouth washes and dentrifices some things (dealt with in a later chapter) but let us start off our prophylaxis with the knowledge of the fact that nature has this great preparation ready to manufacture at our suggestion.

## CHAPTER XII.

### THE PROPHYLAXIS CLASS.

PRELIMINARY WORK BEFORE ENTERING PATIENT ON PROPHYLAXIS.—PROPHYLAXIS TECHNIC.—VIEWS OF KELLY, HOWES AND GOBLE.

When we have finished our dental work, and have taught our patient the importance of oral hygiene, the question which will be asked the doctor is, "Now doctor, what can I do to keep my mouth in this condition, and how often must I come back for examination?" If the facts and arguments, which have been brought forward in this book, have been of interest to you, it is hoped that you will start what I call the "Prophylaxis Class." This is somewhat original with me. I tell my patients, that if they are serious in their desires, I will take them at a nominal fee for one year, and if they will agree to come as often as I think necessary to keep their mouths in perfect condition. There is no use to advise patients to go on prophylaxis while you have reason to believe that they will not carry out your instructions, for it is a waste of time and embarrassing at the end of the year to find that the patient's mouth is in no better condition in spite of all your work. Many times, however, I have seen a gawky boy who was a perfect stranger to a tooth brush, after six months of this treatment, acquire oral hygiene habits which he would follow all his life. Young girls would probably be the best to enter upon this treatment in beginning this work. I do not want any one to enter the class on the first blush of enthusiasm. I generally give them a reprint on the subject to take home and read. My policy of educating patients is to select some good article appearing in dental journals, and secure from the author the necessary reprints. I have always found the author glad to supply them. Then, if they are willing to

fulfil the demands made on them, I gladly place them upon the list. One of the worst difficulties in getting the patient ready for prophylaxis is the banded crowns, and cement and gutta percha fillings. These necessitate considerable dental work. We should have some everyday illustration to use in explaining to the patient the necessity for having this work done, in order to show them that it gives lodgment for debris which would overcome all our efforts at prophylaxis.

PRELIMINARY WORK BEFORE ENTERING PATIENT ON  
PROPHYLAXIS.

Before the treatment is begun all dental work must be brought up to the standard. All roots of teeth, which cannot be saved, must be extracted. All meat holes and fillings with bad contours must be corrected. All tartar must be removed, and the teeth put in a hygienic condition as described under "Cleaning Teeth." All this, of course, must be paid for at regular fees, for, as I have said before, prophylaxis presupposes a perfectly clean mouth.

Fones gives the illustration of two pieces of glass each five inches square. One of these is ground, and the other polished plate glass. Both are smeared over with the debris which we would find in the average mouth. With one sweep of the tooth brush it is easy to clean the polished surface, while it takes several motions to clear the ground glass surface. Another illustration is the cement slab at our chairs. When this has become scratched or rough, we find difficulty in removing the cement left over from our operation. On the other hand, when the slab is new and free from these defects, it may be cleaned by simply placing it in water and wiping off the cement. Now the same thing holds true in the mouth. If the patient is on prophylaxis and the teeth kept in the proper state of polish by the monthly treatments, he can with one sweep of the brush remove any deposit which may have

settled on the teeth, but if this food debris is held by accumulations of tarter, as found in the average mouth, it can only be removed by a dentist.

#### PROPHYLAXIS TECHNIC.

A few years ago at one of the state societies where I was giving a clinic, a countrified looking dentist pushed himself to my side and said, "What the devil is a prophylaxis treatment any how? One of your patients moved to my town and insisted that I give her a prophylactic treatment. I wrote to you to find out what it was, but the answer must not have been correct as I gave her a treatment and she never returned." An explanation of the conditions which necessitate prophylaxis makes a much greater impression than the statement of the simple technique necessary to bring about the results. In the art gallery, we stand enthralled before some master painting, we live with the person or in the scene which it depicts, and enter into the vision which caused the picture to be painted. Had we been in the studio where this work was done, we would probably not have shown any interest in the small brushes and palletts of paint with which the artist made the picture. Thus I have found that I could interest dental students and keep up their enthusiasm until I began the description of the technique. They expected something big, and when I told them of its simplicity, the enthusiasm had a tendency to drop. The technique of Prophylaxis is nothing more than the technique of cleaning the teeth, only carried out to a much greater nicety, and, in addition, the regularity with which it is carried out. One prophylactic treatment will not amount to much, but the effects of a half dozen of these treatments, each one overcoming some defect, makes a vast difference between these two operations.

Dr. Henry A. Kelley of Portland, Me., says:

"In beginning our spraying and polishing, the first condition that confronts us is a viscid coating of saliva

and gelatinous plaques that covers the teeth and gums. First take a tube of rather hot water, of about 150° F., to which has been added one dram of aromatic spirits of ammonia. The alkalinity of this spray, applied under a pressure of from 35 to 50 pounds, will overcome this viscosity. After thorough spraying with this first spray, alternate with a second spray, composed of three-quarters of a tube of warm water and one-quarter of a tube of some of the forms of hydrogen dioxid. To this tube add a few drops—three or four—of essence of anise to disguise the very unpleasant hydrogen dioxid taste. This second spray is used on account of its cleaning effect. As the dioxid comes in contact with the decaying particles of animal matter we have the well-known boiling effect, which tends to lift out and off all foreign matter accumulated around the teeth. Then with a hand porte-polisher (I use Harrell's) charged with flour of pumice begin the polishing. The pumice must be moistened with water to make a paste not too thin, to which two or three drops of essence of peppermint are added. The peppermint serves not alone to take away the sandy taste, but also to exert a cooling effect on the gums, and leaves a refreshing and clean taste in the patient's mouth after the operation is finished. I usually go over all the teeth in a rather hurried way in order to first get rid of any matter adhering to the surfaces, and then after another spraying, alternating with both sprays, I pass to the last tooth on the upper left side and go over all the buccal and labial sides of all the upper teeth, going into the approximal spaces as well as possible with the porte-polisher. Use flattened orange-wood points for the flat surfaces, applying considerable force with a circular movement directed from the neck to the cutting edge and just under the gum margin. This gum margin is a very important region, and it is probable that if this is kept well polished your patient will never have pyorrhea, or if he has had it, it will never return. Having gone around to the last tooth

on the upper right side, spray again with the second spray, and return to the last tooth on the upper left side, going over the lingual surfaces and then spraying with the second solution. Then polish your grinding surfaces. The same process is followed with the lower teeth. Go over all exposed surfaces with your porte-polisher charged with tin oxid made into a paste, which will impart a beautiful polish to these surfaces. Then apply a thorough spraying with a third solution, which consists of one-half a tube of hot water to which has been added one-half a tube of some pleasing general mouth-wash (I use Alkalypsol, which I find very satisfactory; not all antiseptic mouth-washes leave the same refreshing taste in the mouth), and pass waxed floss silk between all the teeth and clean out the interproximal spaces, spraying with the second solution as necessary. After that finish with the third spray, finally allowing a rinsing-out with a glass of cool water. If your work has been thorough, your patient has the first sensation of what a clean mouth means. Patients often tell me that they hate to go home and eat and soil the mouth again.

“It is well to alternate from month to month, taking the upper teeth first in one month and the lower teeth first the next month. I find that for some reason which I cannot explain, the upper teeth respond to treatment, especially in pyorrhea cases, much more readily than the lower ones, and I have these two thoughts to offer in this connection. I find that when I begin with the upper teeth I often spend forty minutes going over them, which leaves me but twenty minutes of the hour appointed for the lower ones; hence the practice of alternating from month to month. The pumice also becomes much thinner from the admixture of saliva in polishing the lower teeth. I often use the saliva ejector or napkins to offset this latter condition, but I cannot as yet say with what result. As you first begin to polish with the pumice, your wood point will slip over the tooth, and there will be a slimy, greasy

sensation. But as you polish and polish, you get down to the clean tooth-surface, and then you experience that squeaky sound that indicates a clean tooth-surface. The slimy substance that you are removing is composed of the gelatin-forming micro-organisms, which I shall explain later in a quotation from Johnson. Hence, if you make every filling smooth, allow no shoulder or lodging-place for the decay-producing germs to remain, and then destroy the gelatinous film under which the micro-organisms that cause decay are enabled to effect their destructive process, you render it extremely hard for decay to begin or make progress."—From *Dental Cosmos*.

Dr. Kelley suggests the use of a nasal spray tip, made by Debilbiss Co., which he uses to spray out the interproximal space from the buccal side. Place the index finger just over it (that is above it, on the upper, towards the root end) draw it back just a little and spray. The spray thus goes beyond the tooth and out on the palatal side. Following this suggestion Dr. Kelley says, "The patients realize how you have cleaned the teeth."

The difference between my present technique, and Dr. Kelley's is that at each operation the first thing done is with a small scaler of the Younger type (which has had its sharp edge removed) to gently insert it under the free margin of the gum, and to circle the entire gingival portion, being careful to exert no force on the instrument which would in any way tear the attachment at the periodontal margin. I consider this the most important part of prophylaxis, for it is this membrane, above everything else, which we must protect. It is here that the beginnings of deposits may be detached in their incipency. No porte polisher or pumice will do this; only skilled touch and the proper instrument can do it.

The mouth in which there has once been a pyorrheal condition will often call for a fine point of judgment, for it is often necessary to enter forcibly into these former pyorrhea pockets, and clean them out thoroughly. This.

if rightly done, can do no possible harm, and certainly is the means of preventing future eruptions from some infection forcing its way into these places. If this is done, every three or four months, it will in time do more to eliminate this scar than any other treatment. It seems that with each treatment the pockets get shallower.

After this, I differ with Dr. Kelly as to the manner of using the dental floss silk. He uses it last. I use it immediately after instrumentation for the reason that at this time, the mouth has no accumulation of powdered pumice, which would make it most difficult to pass silk between the teeth. Do not put the abrasive on the silk, and then attempt to pass it between the teeth. Pass the silk in first, and then place on a small amount of abrasive. The same procedure is repeated at each interdental space. The largest and broadest floss silk that can be passed between the teeth should be used; this is the danger line at which we make our greatest fight against caries, and the simple running of the floss silk between the teeth will not accomplish the desired results. According to later investigations by Pickerill, it might be better to substitute for the spray containing aromatic spirits of ammonia, to overcome the viscosity of the saliva, some vegetable acid spray should be used which will not only give an increased flow of saliva, but will furnish the protective qualities which it possesses, and will remain for some time after the prophylaxis treatment; this flow of saliva is undoubtedly inhibited by an alkaline spray.

Dr. Gillette Hayden called my attention to the use of powdered sodium citrate for the removal of mucus collections. Dr. Cook, of Chicago, endorsed it, claiming that it attacks only organic substances, without detriment to the teeth or the soft tissues. It can be used at the chair in connection with the abrasive used in the treatment, but must not come in contact with any moisture previous to the time of using it. Use it with water instead of any other fluid as it combines readily with other substances.



An admirable adjunct for prophylaxis treatment as advised by Dr. Minnie Masters Howes, of Minneapolis, is giving much attention to massage and spraying:

"I massage the gums; showing the patient how it is done and instructing him to do this about five minutes each day, as long as it is necessary. I use the thumb and first finger, catching as high up on the gums as possible, the finger on the labial and thumb on the lingual surface and pull down over the teeth, gently at first, if the gums are sore and more vigorously as they become harder. Reverse the motion for the lower teeth. This will make the gums hard and firm and start up a healthy circulation. It will also check recession of the gums if persisted in, and, in many cases, will pull them back to their normal position about the teeth. The teeth and soft tissues of the entire oral cavity are now sprayed with an antiseptic wash under heavy air pressure, forty or fifty pounds. The spray is directed into all pockets, distending them and washing out all pumice and debris; the teeth are thoroughly washed, especial attention being directed to the free gingival gum margins, the tongue and mucous lining of the mouth are cleansed with the greatest care and circumspection. This phase of the treatment is the one most appreciated by the patient. The sense of cool cleanliness left in the mouth by the spraying is something that must be felt to be appreciated.

"After the first treatment, the gums are apt to be sore, so I have the patient use bicarbonate of soda. Take a teaspoonful in a third of a glass of warm water and rinse the mouth often until soreness in the gums has disappeared. Give the patient all the instruction you can in the proper care of the mouth and teeth, and when they return for their next treatment, point out the places, if any, they have missed. If it is a very bad case, I have the patient return in a week for another treatment. Then after that, once a month is usually often enough, although there are cases that every two weeks would not be too often to see."

As opposed to this system of monthly prophylaxis, is that of Dr. L. S. Goble, of Rochester, N. Y., who writes of his technique in a recent number of the "Dental Dispensary Record." He prefaces his remarks by saying that for twenty years he has been doing prophylaxis work in spite of uric-acid and rheumatic diatheses, and found that the only way to properly carry out prophylaxis was to remove the tarter, and keep the mouth clean. He further says that he is not in sympathy with the so called "Prophylaxis Movement."

"Like the cry, 'On to Richmond,' we yell, 'Remove the Plaques,' and so the whole mouth is scrubbed and the gums are punched and stain is used, all on the basis that a micro-organism is the cause of caries, although it has not been isolated and the theory has not been proved. Do the plaques stay removed? No, they return in full force in six hours and in some peoples mouths in two hours, showing that the micro-organisms are always there and rightfully there. You may ask, 'What do you say then? Let the plaques alone?' No, I say remove them in so far that you do not injure the gum tissue and only that far. And this putting stain on the teeth and then tearing the mouth to pieces getting it off, just to show the patient where the plaques are, I consider a mistake or worse. And to have all your patients come once a month for prophylaxis is rank nonsense, and I have seen many evil effects from it. I have, and you have patients whose mouths after three months have no more plaques than other patients have after six hours. The former under the monthly rule, you would rob, the latter you would be neglecting. I have patients that come year after year and who need no oral prophylaxis and yet I have no doubt that I could show plaques. I do not believe that plaques cause decay, but as a media for the acid of fermentation going on in the mouth they may cause one per cent., I doubt if it is more."

## CHAPTER XIII.

### INSTRUMENTS AND POLISHING MATERIALS USEFUL IN PROPHYLAXIS.

Authorities are not agreed as to what constitutes the instrumentation for prophylaxis. Some advise against the use of anything like a scaler, while others advise the regular use of delicate scaler under the free gum margin, and reopening and cleaning out old pyorrhea pockets at frequent intervals.

The condition before treatment, and present state, together with a full understanding of the normal and pathological picture presented by each case, must govern the operator on this question.

Instrumentation used with a proper knowledge of the demands of true prophylaxis treatment can only be productive of good. Whatever points selected and used should have the sharpe edges removed.

The various shapes of spoon excavators can be made into most excellent instruments by removing the edge with a stone. Many of the instruments hereafter described for pyorrhea work are also useful in prophylaxis. Numbers 3, 4 and 15 of the Good set have been of greatest use to the writer.

Smith claims all power polishers are injurious in prophylaxis work. R. G. Hutchinson, Jr., says, "Rotary brush wheels on the engine are an abomination and do infinitely more harm than good when brought in contact with the soft tissues, but soft rubber discs and cups, if kept wet and not rotated very rapidly or pressed too hard, may be used to advantage."

#### INSTRUMENTS FOR HAND POLISHING IN PROPHYLAXIS.

There are a great many porte polishers on the market which are herewith illustrated. Dr. Harrell, of Gaines-

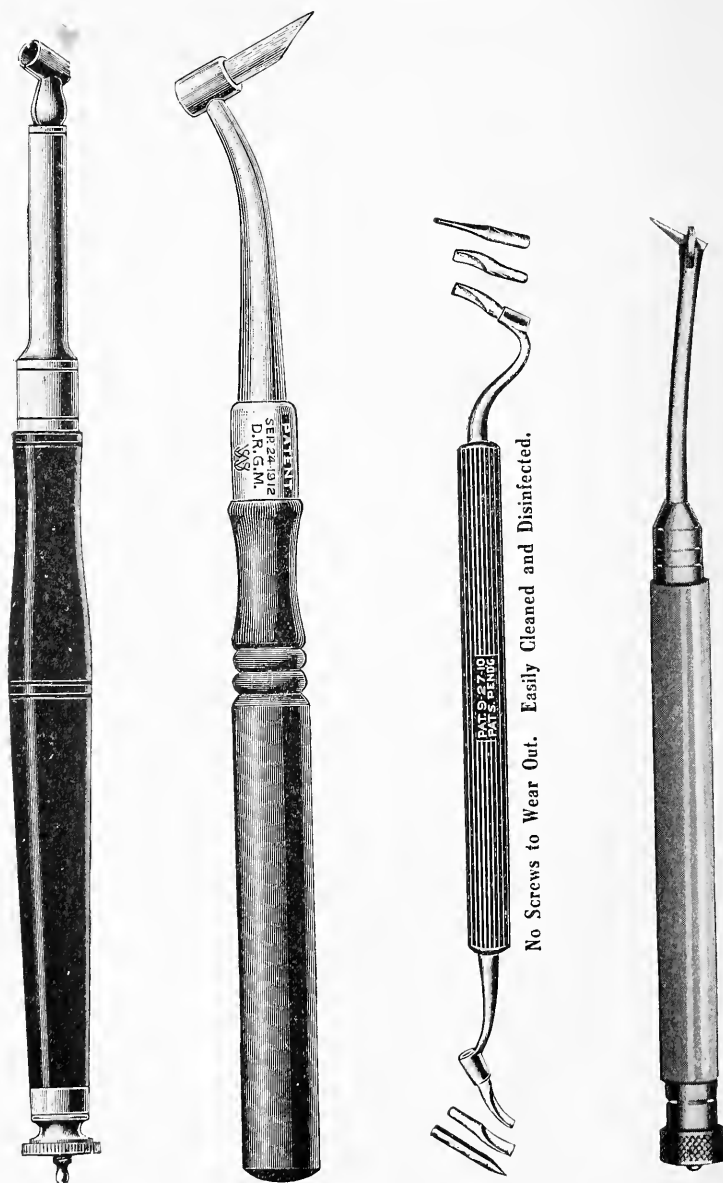


FIG. 19. THE BEST FORMS OF HAND POLISHERS FOR PROPHYLAXIS WORK.

ville, Texas, invented the best instrument ever produced for the purpose of prophylaxis treatment. The sale of this prophylactic polisher is now controlled by the Oxylene Company of San Antonio, Texas.

In the porte polisher various kinds of points can be used. Generally, however, they are made of orange-wood, and shaped out into a point or into a wedge. In addition to the porte polisher, it is well to have about a dozen large size orange-wood sticks sharpened into various shapes for immediate use. The broad points to be used on the broad sides, and the small ones for use between the teeth and in the fissures.

A new point must be placed in the porte polisher for every patient, for as soon as the patients begin to learn something about prophylaxis, and the treatment and technique, they are very particular and watch very carefully to see that everything is as aseptic as it should be. If the sticks of orange-wood or bass-wood be used, the wood should be washed carefully, a new point cut, and the sticks kept in a glass jar filled with antiseptic solution. Before I began doing this, I frequently had the patients ask me if I used the same stick on all of the patients.

Dr. H. A. Kelley suggests the use of strips of shoe peg wood which can be cut off the exact width required. He claims that these have the advantage of orange-wood sticks in that they give an expansive flat surface for polishing the flat surfaces of the teeth, and that they are much superior to the regular orange-wood sticks. They can be procured very cheaply at any shoe factory or wholesale shoe shop. Dr. F. H. Skinner furnishes, with his instruments, a box of prepared orange-wood points which are excellent. The S. S. White Dental Manufacturing Co., and the J. W. Ivory Company, make a specially shaped point, for use in porte polishers, which is quite an advantage in some places. The greatest aid as a substitute for the orange-wood stick is the contribution of

Dr. J. W. Jungman, of Cleveland, which consists of round bass-wood sticks about six inches long which are placed in a 1 in 1000 solution of bichloride with green soap. They remain in this until thoroughly saturated. Dr. Jungman furnishes me with the following prescriptions for use with these bass-wood points.

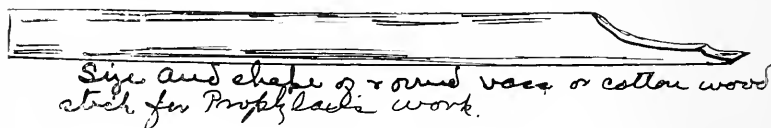


FIG. 20.

No. 1	No. 2
Prescribe in cases of pyorrhoea where the enamel will permit the use of a gritty powder.	Where it will not permit a gritty powder.
Pulv. Castile Soap.....Parts $\frac{3}{4}$	Pulv. Castile Soap.....Parts $\frac{3}{4}$
Zinc. Sulpho Carb..... " 1	Sacch. Alba. Pulv..... " 1
Pulv. Pumice (Fine)... " 6	Oxide Tin, (Mercks)... " 4
Oxide Tin, (Mercks)... " 3	Zinc. Sulpho Carb..... " 1
Creata Precip ..... " 12	Creata Precip..... " 12
Flavor, Q. S.	Flavor, Q. S.
No. 3	No. 4
In well-kept mouths where no medicament is required.	In acid mouths.
Pulv. Castile Soap.....Parts $\frac{3}{4}$	Pulv. Castile Soap.....Parts $\frac{3}{4}$
Sacch. Alba Pulv..... " 1	Sacch. Alba Pulv..... " 1
Oxide Tin, (Mercks)... " 3	Oxide Tin, (Mercks) .. " 3
Creata Precip ..... " 12	Sodium Borate (Squibbs) " 2
Flavor, Q. S.	Creata Precip. .... " 12
	Flavor, Q. S.

I secure large mouthed bottles, such as those used for barbers' pomade, which hold about one half pint. Into these I put the various mixtures which I use in prophylaxis work.

In beginning this work, we must be cautious not to use the common pumice stone, as it will cause cupping in at the cervical margin of the teeth. From the use of this

heavy abrasive, I have noticed cups in the teeth of a number of patients. After the patients have been on the treatment for several months, it is not necessary to have this abrasive used every time. The finer mixtures of oxide of tin or prepared chalk, or the preparations made by Dr. Carmichael (called Carmi-Lustro) may be used. The views of Dr. Carmichael on the subject of the abrasive for use in prophylaxis are so interesting that I feel it best to give his views in his own language:

“The polish or gloss of enamel was put there by nature to protect the teeth from diseases. If this highly glossed surface of the tooth enamel was retained, foreign matter could not readily adhere and if the surfaces were always polished to the gum margin, the teeth would not decay, nor would there be dental pyorrhoea.

“All the substances in general use for cleaning teeth are harsh and gritty; though they be very fine grit, they accomplish the purpose only by a scouring process, thus gradually destroying the natural gloss of the enamel. Although these scratches are not visible to the naked eye, they are sufficient to destroy the brilliancy, and leave the surface all the more susceptible to receive foreign adhesions; in other words, the more we scour the teeth, the more we must scour, to keep them clean; to say nothing of destroying the life luster; as proof of this, it is only necessary to dry the teeth to disclose the fact that the enamel gloss has been dulled.

“It may be necessary, nevertheless, for the dentist to apply a very finely powdered abrasive, to remove stains in cleaning teeth, and this should not be used over the entire surface of the teeth, but confined to the stained area, using a preparation of a character that will not scratch.

“Experience has proven that a friction dry rub is not only more effective in removing the adhesions, but the life luster becomes more intensified.

“The enamel must be kept so brilliant that the teeth

will ward off disease. To accomplish this, we must adopt those measures that will restore the teeth to a state of nature, which is in line with the highest attainment in dentistry."

In the use of any polishing instrument bear in mind the curvature of the teeth, and do not rub in one place, up and down, but follow the curvature of the teeth in a circular motion, and at a *slow rate of speed*. In this manner, we are enabled to feel any accumulation which we wish to remove. If the point slips over the tooth as though it were greased, we know that it is enveloped in a secretion which must be removed. We must educate our fingers up to this delicate sense of feeling. We soon learn that a regular patient's teeth feel entirely different from one who has not had this care. There is a peculiar *squeek* of the patient's teeth, and the minute we hear this, we have caught on to the proper manner of handling our porte polisher. Just at the free margin of the gums it must be polished very carefully. Many operators, through too rapid movement of the porte polisher or through fear of injuring the gums, lose much of the importance of this work. I have not found the contact of the porte polisher against the gums to be injurious, if rightly used.



## CHAPTER XIV.

### PROPHYLAXIS TREATMENT OF FISSURES AND GROOVES.

#### SOFT SPOTS.—SENSITIVE AREA TREATMENT.

As previously mentioned, the fissures, grooves, and pits in the teeth will cause us the greatest amount of trouble. The first time that this condition occurs in the mouth is following the eruption of the first lower molar. It has been my practice for years to attend to these teeth as soon as they appear through the gums, whether the patient is on prophylaxis or not, but certainly if on prophylaxis. The tooth should first have the sulci cleaned out with a fine pointed instrument. The surface of the tooth is then cleaned off with some mild abrasive. The tooth is kept as dry as possible, and then sterilized with absolute alcohol. When this is done, the whole erupted surface of the tooth is covered with some quick setting cement. Many prefer one of the copper cements, but I have never seen any advantage in it. The erupting permanent tooth being behind the temporary molars, at a lower level, furnishes a depression which forms an ideal catch basin for decaying foods. Again, if the children brush their teeth, which they seldom do at this age, it is doubtful whether they ever clean this surface. As the tooth grows up into place, the attrition of food soon wears all the cement away except that portion in the grooves. As soon as the tooth is brought into use for mastication, if this cement has not been worn away, it can be removed, and in many cases we will find that no further attention is necessary. However, if deep sulci have developed, we can, with a real small burr, cut the fissure just sufficient for a small gold filling, or, perhaps, the little groove can be filled with cement. It will be surprising to note how this will last in this small line cavity.



FIG. 21. FISSURE IN LOWER BICUSPID (SOLBRIG).

Such a tooth, unless properly treated, is almost sure to develop a serious decay in the fissure.

Sometimes the simple opening and bevelling of the walls that lead to the sulci so that the tooth brush can be gotten down into it, is all that is necessary. The grooves in the buccal surfaces of the teeth had best be ground out with the smallest stone possible, and then the surface thoroughly polished. However, if the groove is of such depth that the grinding will go through the enamel, or, as is often the case, a small pit shows somewhere along this groove it can be filled with a cement filling as this is probably the best to put in this position.

#### SOFT SPOTS.

Soft spots at the juncture of the teeth and the enamel margin where previous recession of the gums has taken place, have proved one of the most disappointing operations in prophylaxis, and yet I feel that the percentage of successful work along this line is sufficient to warrant me in giving the technique; it is certainly worth while trying this method, even if the tooth should require a filling some years later.

Small white spots in childrens' teeth can be polished away. The method of doing so is by taking the smallest size mounted stone, grinding down to hard surface and

then applying cuttle fish discs, and finally polishing off with an old fashioned moose hide polishing point or with Darby's Hard Buff Polisher No. 3, used in the dental engine. On this polisher should be used oxide of tin or some preparation such as, "Carmi-Lustro," provided the decay or white decalcification does not extend through the depth of the enamel. However, more extensive decays just over the juncture of the cementum and the enamel on the tooth root often presents a leathery surface which is very difficult to handle with this protective technique.

The surfaces in the anterior part of the mouth might be handled with such substances as nitrate of silver hereafter described but, this being a question of position, the next best thing is to try the polishing technique. If this leathery condition does not extend into the inter-spaces, we sometimes get excellent results by the simple removal of this condition, and polishing the surface as just described after removing this leathery substance. If we find a cavity, now is the time to fill it. However, if we reach sound tissue, we should have a cup-shaped surface. This surface can be maintained in a polished condition and it may not require filling for many years. Many times in attempting to operate at this point, we find an extra sensitiveness, and the patients will sometimes say that they would rather have the tooth extracted than to have you polish at this spot. Then is the time to use the procedure given me many years ago by Dr. Taylor, of Hartford, who sprinkled a small amount of powdered cocaine over the gum margin allowing the moisture to dissolve the crystals. He advises that the cocaine be used in about the same manner as when applying the rubber dam, but cautions the operator not to allow the patient to swallow it. Dr. Taylor used this method for many years without the slightest symptom of trouble.

One other point, which can be used in the treatment of these sensitive spots at the gum border, especially after

they have been cleaned out, polished, and are still sensitive, is the application of a small burnisher.

The patient's head is held firmly, and the hand holding the burnisher is held against the tooth which is to be treated. Great pressure is applied with up and down motion, being careful not to let the instrument wound the gum margin. This burnishing should be kept up for several seconds. It is remarkable what relief this method sometimes affords, a considerable length of time elapsing before the return of the sensitiveness. I can give no better explanation of this than the answer given by the student who said that this burnishing "brads the nerve terminals at this point." There are undoubtedly irritated and exposed nerve ends, and the patient will tell you so when you attempt to do the operating. The successful "bradding" in my own mouth on an upper bicuspid, where there has been a slight recession of the gums, has afforded me the greatest relief of any procedure which has been suggested or tried.

In the case of small mouths, I use one of the various cheek distenders, which not only enables the operator to work with greater ease, but also much to the comfort of the patient.

## CHAPTER XV.

### RESULTS OF PROPHYLAXIS TREATMENT.

The various arguments brought forward against the monthly system of prophylaxis will not have any weight with anyone who has observed a patient who has been upon this system for a while. Six months treatment will change the whole appearance of the ordinary mouth.

1st, The mucous membrane will assume a normal pink color, not only around the buccal surfaces of the upper teeth but in every part of the mouth.

2d, Teeth that disfigure the face can be improved in appearance, for, if their surfaces be brought to a high state of polish, and the surrounding tissues healthy, one does not notice so much their ill shape.

3d, Many defects in the teeth can be worked out, white spots removed, and grooves smoothed out.

4th, Hypersensitiveness of the cervical margin and irregularity of the nerves can be corrected.

5th, Decay is prevented.

6th, The vital structures within the tooth, and those surrounding it, especially the peridental membrane, are maintained in normal condition.

7th, The mouth is safeguarded against violent infections.

8th, Osseous structures are protected from the irritation of deposits or infection.

9th, Pyorrhea is positively prevented.

10th, Last, but not least, the greatest result in prophylaxis is the aid, training, and maintenance, by the patient at home, of a perfect dental toilet technique.

If it were always possible to place the mouth in a perfectly clean condition as to caries and fissures, and the patient carried out the instructions for care of the teeth at home, we would be able to demonstrate in every case

that "Clean teeth never decay." Unfortunately this is seldom the case, and we are often humiliated in our prophylaxis by the discovery of a whiteness showing through the enamel, giving evidence of the carious condition underneath.

It is well to explain to the patients, before placing them on prophylaxis, in regard to the claim that prophylaxis prevents decay, that some slight carious condition may possibly develop during the first six months or year; that in the interproximal surfaces, between the molars and incisors, the etching of the enamel may have proceeded so far that it will be impossible to prevent further decay. It is not always possible to find these at once as they sometimes do not develop for six months or a year after the patient has been placed on prophylaxis.

In my experience of about ten years in prophylaxis, I do not recall, in any of these regular patients, a decay beginning out in the open, that is, on a surface where it was possible to maintain a polished surface. Many teeth with deep sulci and grooves may decay in spite of all the prophylaxis you can give them, because it is impossible for the dentist or the patient to keep these depressions in a perfectly clean state. It is the best policy to fill these either permanently or temporarily as explained in the chapter on technique of prophylaxis.

In regard to the prevention of pyorrhea, I can say that in my own experience not one has shown the least tendency to this disease. Others who are doing this same work have observed the same thing, of course, this is not taking into consideration the patients who have had pyorrhea at the time they began prophylaxis.

As evidence for my own satisfaction of the fact that prophylaxis really does prevent disease, I selected pages at random from my records, which give the amount of dental work required by patients in the five years before they began Prophylaxis in comparison with the amount of work they have had done since. I included in these

statistics such restorative work as fillings and abscesses. For the sake of comparison with this, another table was made of dental work done for patients of about the same class and mouth conditions as the patients who have been on prophylaxis.

These tables show that the patients who have been on prophylaxis have had little or no dental work done since entering upon this system. The second table suggests, that, had these first named patients not entered upon a system of prophylaxis, their dental requirements would have been like those named in table No. 2, with their constantly recurring dental bills. In addition to this, all these prophylaxis patients report fewer doctor bills, and their illness, if any, has been light in character; also they have derived much pleasure from the knowledge that their mouths were in a healthy and beautifully polished state. Of as much interest as all the above results is the pleasure derived by the operator who sees the accumulative effects of his work, bringing unkept mouths to a healthy state. I have seen prophylaxis patients so that you could tell them across the room, when they smile, by the brilliancy of their teeth. Also the satisfaction of having people say, "Why, she must be a patient of Dr. ———, for her teeth are so clean looking and pretty."

The gums of a patient on prophylaxis should become hard and pink, and should hug the teeth closely. In other words, show a condition of perfect health. The fillings, which ordinarily would show rough margins and surfaces, should present the appearance of having just been inserted: and, after the patient has been on the treatment long enough, all surfaces should exhibit a luster which reflects the light.

## CHAPTER XVI.

### SOME IMPORTANT OBSERVATIONS ON THE TEETH AND SALIVA.

#### TOOTH ENAMEL.

Pickerill, and others, who have studied the histology of human teeth, have shown that the enamel, as laid down in the formation of the tooth, may contain defects, as well as fissures, and unclosed rugæ. This, of course, favors decay by the retention of carbo-hydrates in the form of food stuffs, with the final development of micro-organisms. If we examine any mouth which is subject to a large number of caries, we will find that the enamel contains some break on its surface, which defect, while small, is sufficient to retain food and allow it to decompose.

Dr. Head is authority for the statement that the enamel of the teeth, which has become decalcified in weak solution of lactic acid, or orange juice, even to the point of losing their opacity, will be quite restored when subsequently immersed in saliva for some time. While this seems rather hard for us to accept at first, thorough chemical investigation seems to bear out this experiment and gives us a clue on which to build our future prophylactic technique, and mouth wash formulas. There is no doubt that the enamel of the teeth varies in structure, hardness, density, permeability, and solubility, and that we must recognize the fact that a large part of this departure from the normal must be due to developmental as well as acquired defects. Taking this view of the matter, our prophylaxis treatment must be directed towards the enamel in its formative period in order that the proper osmosis of the lime salts and phosphates shall take place.



Rose, Bunge, Malcolm, and Pickerill have made exhaustive experiments in an effort to determine whether or not the enamel of the teeth could be influenced by the drinking of water heavy with magnesium or calcium salts. The result was that the structure of the teeth was not influenced to such an extent as are the other bones of the body. Their conclusions were, that the hardness of the water was not naturally or essentially a factor for us to consider.

#### ON SALIVA.

Saliva in the normal mouth varies in character from a thin watery nature, copiously discharged, to a thick, ropy, tenacious nature such as we often see in unclean mouths.

Some writers have endeavored to show that the lessening of the quantity of the saliva is responsible for an excessive amount of dental caries. So far as I have been able to observe clinically, the question of quantity is not of so much importance. Recently, I was baffled in the case of a young married woman, who, when excited or nervous, suffered from temporary stenosis of all the salivary ducts, so that the mouth was almost as dry as though she had been taking atropin. So great was the pain sometimes caused from this condition that the patient became very despondent. As the mouth and the surrounding structures were in a perfectly normal state, I, and my medical associates, were at first unable to find any indications for treatment or to afford the patient any relief. We began to treat her for a trouble far removed, and one which at first we thought had no connection with the condition of the mouth, for we supposed that getting her mind off her mouth conditions would at least give her some degree of comfort. She improved for a time under a physician's care but later passed out of our observation. The point, however, is that while the patient's mouth was dry, she did not exhibit any considerable amount of carious action of the teeth.

It has generally been noticed that where a pyorrheal condition is present, we have an increased supply of saliva, yet there is often noted a total absence of caries. In the mouth of the case described, there was a reduced amount of saliva, yet the mouth showed only a small amount of care. My observation, while based upon a large number of cases, does not allow me to say with any positive degree of certainty, that caries are influenced by quantity of saliva, still I am of the opinion that the presence of some element in the saliva, as well as the quantity of the solution, must be looked for as the prohibitive agent.

Of course, we must realize that stagnation of any secretion must result in decomposition or putrefaction, and that this will contain some degree of infection, but I am forced to believe that it does not have as much influence as Pickerill would have us think.

It is a strange law of nature that the quantity of the saliva is not increased by the drinking of ordinary liquids. You can have the patient with thick, ropy saliva drink large quantities of water without perceptibly influencing this condition. However, stimulants do produce vasomotor effects either as a stimulant or a depressant. Tea is given as the greatest depressant, while acid fermented liquor, as port wine, produce the highest alkalinity index.

The conclusion which I wish to lead up to is this. It does not matter what the condition of the saliva is, nor the quantity, nor the quality. What we are most interested in is to note, that the patient with an abnormality of the saliva has a much better chance for a return to the normal or the physiological condition when on regular prophylaxis.

Pickerill has made considerable study of the composition and behavior of the human saliva, and from his writings we have the following deductions. On the degree of excitability of the various glands which furnish the saliva, he has found that the ordinary tasting of

foods does not excite the glands to action and that "bread and butter depress the secretion." In his table of experiments from bread and butter at 1.73 alkalinity per minute, he runs the list of pine-apple, cake, grapes, celery, meat, stewed apples and up to lemon juice which is 6.24. Also, it is shown that the alkalinity of the parotid saliva is greater than that of the other glands, although these glands furnish such a small quantity of secretion. It is a most beautiful and wonderful provision of nature that, whatever the degree of acidity in the food products, the proper alkalinity is furnished by the saliva, although the acid food may be so strong that it could etch the enamel surface of the teeth, as in the case of the Silesians, who suck lemons for a pastime. The after flow contains sufficient alkalinity to neutralize the acid, and the question of alkalinity is one of the most important with which we have to deal.

#### PTYALIN.

Physiologists teach us that the action of ptyalin in the saliva is for the purpose of converting the starch into sugar, in order that the sticky or solid material might be changed into one soluble and ready for absorption. We are led to believe that ptyalin has more to do with mouth conditions than this.

The operation of extirpation of most of the salivary glands has not resulted in any difference in undigested starch products. In order to prove this, Pickerill selected two rabbits, A and B. One was kept as a control while the other one had the parotid and submaxillary glands on both sides removed. Weeks after the operation feces were collected at intervals, and the examination showed no difference or a very small difference of undigested starch. Pickerill suggests that the function of ptyalin is not as heretofore supposed, but rather, for acting upon the carbohydrates remaining, or debris left around the teeth, to be used after the process of digestion in the intestines has gone on.

## SULPHO-CYANIDE OF POTASSIUM.

Another substance in the saliva which has been the subject for much speculation is sulpho-cyanide of potassium. Some thought that by its quantity increasing we would gain some protection against caries, and yet, Ellenberger and others have demonstrated that this substance is not found in many animals which are immune to caries. Some authors, as Neuchael, Lowe, Beech, and Geyger, are of the opinion that some salt of this substance, administered internally, might in some way produce an inhibitory action on dental caries. However, Miller and Kirk have exactly the opposite opinion. About all we know is that a weak solution of sulphur-cyanide of potassium possesses slight antiseptic qualities. Experiments show that the percentage of this drug in the saliva can be increased by the internal administration of one fourth of a grain daily, and the suggestion is given to try this in those cases where children's teeth are being destroyed by caries. It is doubtful whether any direct good will result but it appears to be worth giving a trial.

## PHOSPHATES AND CHLORIDES.

Phosphates and chlorides undoubtedly increase our desire for a certain class of food and drink. For instance, if we rinse our mouths with a mild solution of sodium chloride we are enabled the more readily to taste sweets.

## MUCIN.

This substance, so far, seems to have only the function of a lubricant or protective covering for the mucus membrane. Unfortunately, it is also precipitated around the teeth and, instead of being a protection, forms various kinds of plaques. Into this precipitation is caught the food products which in time cause the development of caries.

## POSSIBLE PRESENCE OF IMMUNE BODIES IN THE SALIVA.

Miller suggests that phagocytes or protective bodies may be present in the blood. However, the presence of phagocytosis has not yet been established. If this is ever done, it is possible that opsomins of the saliva and the raising of this index will become just as potent a factor in dental prophylaxis as it has proven in raising the immunity of certain diseases.

The result of all this investigation gives us very little knowledge which we can use in our work of preventing decay. This much we do know, that organic acids increase the alkalinity of the glands, and, conversely, neutral salts produce diminution of the protective substances which we wish, and that if we remove oral sepsis, by a system of prophylaxis, the saliva can be made one of the greatest aids in keeping the teeth clean, because, in a proper condition, it acts by constantly washing the teeth and surrounding parts, giving the patient the most ideal mouth wash, nature's own make, which formula has not been equalled by anyone.

## CHAPTER XVII.

### METHODS OF NOTIFICATION AS USED BY KELLS, FONES, AND ADAIR.

Since the whole idea of prophylaxis is founded on *regularity* and *system*, it is well to work out for each individual some scheme to carry this out. Dr. Smith simply telephones his patients once a month. Dr. Kells, of New Orleans, has a list upon which he places the names of all patients, at their request for regular attention. At stated intervals from this list he mails cards as per the illustration:

<p style="text-align: center;">DR. KELLS WOULD REMIND</p> <p>M.....</p> <p>that the time has now arrived when, to insure their best care, .....teeth should be examined.</p> <p>1237 Maison Blanche. Phone Main 1617.</p>
---

FIG. 22.

Dr. Kells' idea is that he wants the patients to know that he is interested in them, but does not wish to place himself in a position of commanding them to come to his office, as it might be embarrassing sometimes to call a patient who had decided to go to some other dentist. The recipient of this card is not commanded to come to him, but is just reminded that his teeth need some attention and he may go where he pleases for this work.

Dr. A. C. Fones mails the patient an engagement card when he thinks it time for his teeth to have a treatment. In order that he may know whether the patient has received this notice or not, he encloses with the engagement card a self addressed, stamped envelope, which contains a second card bearing the same date as the notice, which is to be signed and returned by the patient.

<p>DR. ALFRED C. FONES:</p> <p>Your appointment card for</p> <p>June 3d, at 3 P. M.</p> <p>has been received and accepted.</p> <p>Signed.....</p>
---

FIG. 23.

If the patient had to telephone his acceptance or write a note, Dr. Fones might not be sure as to a definite engagement. By this system he makes it so easy that the patient readily signs the return card, and mails it in the envelope already addressed to Dr. Fones.

Others doing prophylaxis, simply leave it to the patients to come in at regular intervals. None of these plans seemed to fit my ideas of carrying out this work so I devised the following scheme:

At first, I designated certain hours throughout each day for this special work. Mrs. ———'s appointment was on the 10th, and she was reminded the day previous. So on down the list. This scattered the work all through the month and interfered with regular dental operations. The next plan was to bunch all this work into whole days, and the organization of what I call my "Prophylaxis Class." Certain days in each month were devoted exclusively to this work and set aside accordingly. For instance, the second Tuesday, Wednesday, and Thursday in

each month. Afterwards I added other days as new patients accumulated.

The book used was like an ordinary dental engagement book, only the engagements were permanent, and the book had only eight or ten pages, each page representing a day. By referring to the cut of the engagement book, you will see that we knew Mrs. Smith had a permanent engagement. Her time was paid for whether she came or not. By adhering closely to these engagements of one half hour each, we found that we could treat from twelve to fifteen patients in each of these days. Now having a list like this of several days, it was out of the question to phone all of these patients every month so I had printed the card of notification which is mailed the day previous to the time for treatment.

A large number of patients to treat, and this work exclusive for the day, make it very interesting, both to myself and the patients. These cards are neatly printed and only the dates have to be filled in by the secretary.

8:30—MRS. WM. SMITH	419 Piedmont Avenue
'Phone 490	
9:00—MR. FRANK JONES	43 Peachtree Street
'Phone 8960	
10:00—MISS RUBY SIMPSON	76 Johnson Avenue
'Phone 2442	
Second Monday in Each Month	

PART OF PAGE FROM "PERMANENT ENGAGEMENT BOOK."  
Prophylaxis Engagements for the Second Monday in Each Month.



The day before his first engagement he receives a postal card with his dates, thus:

## SECOND MONDAY IN EACH MONTH

### DATES FOR PROPHYLAXIS TREATMENT

#### PRESERVE THIS CARD

January .....	Monday 10, at 9 o'clock
February .....	" 14 " "
March .....	" 14 " "
April .....	" 11 " "
May .....	" 9 " "
June .....	" 13 " "
July .....	" 11 " "
August .....	" 8 " "
September .....	" 12 " "
October .....	" 10 " "
November .....	" 7 " "
December .....	" 12 " "

Charge \$——— per year.

A reminder card will be mailed previous to each date but failure to receive such notice does not entitle patient to another engagement in the same month without extra charge, unless failure to be present is due to unavoidable cause, in which event notice must be given several hours in advance.

The charge for prophylaxis is by the year for twelve regular engagements, and is payable semi-annually in advance. If for any cause these treatments be discontinued before the expiration of contracted time a charge of \$—— will be made for each date up to the time notice is received to discontinue.

Appointments are not to be changed more than three times per year.

FIG. 25.

For each succeeding engagement he gets a postal card very similar, like this:

<p>YOUR ENGAGEMENT FOR PROPHYLAXIS IS.....</p> <p>..... AT .....O'CLOCK</p> <p>The charge for this treatment is by the year from date of first engagement and is payable in advance. The date and hour is fixed, if possible, to conform to convenience of patient and is not to be changed oftener than twice a year</p> <p>As this time is reserved, failure to meet engagement results in loss to patient and can not be made up unless the absence is caused by Providential hindrance, in which event notice must be given a day in advance</p>
--

FIG. 26.

The patients should not commence our system of prophylaxis unless they mean to stay at least a year; we enter the charge in our ledger for one year, and a bill is rendered them for one half, or the whole of the amount. This must be paid in advance if this time is to be saved for them.

At the first appointment, on the record ledger sheet, we make a note of all cavities, including the incipient ones, and all defects of the mouth. The patient should be made acquainted with all these conditions and shown the note in the dental ledger. At the first treatment the patient must invest in two brushes, floss silk, and dentrifice cream, and he is taught how to use them. One brush has the name of the patient engraved on the handle with a dental bur and made plain with a smear of ink. This is kept in the office in the formaldehyde sterilizer to be used solely for teaching the patient to care for his teeth. The patient, at first, does not understand all this busi-

ness of cards and dates but the system keeps up his interest. After the third visit the benefit is apparent, and the patient is yours to command. After years of study and practice this system has been evolved as the most efficient method of handling the work.

## CHAPTER XVIII.

NOTIFICATION OF PATIENTS.—RECORD OF CASES.

BY JOHN OPPIE MCCALL, D. D. S.

NOTIFICATION SYSTEM. BY HENRY A. KELLEY, D. M. D.

NOTIFICATION OF PATIENTS.—TECHNIQUE OF PROPHYLAXIS  
TREATMENT. BY GILLETTE HAYDEN, D. D. S.

NOTIFICATION OF PATIENTS.—RECORD OF CASES.

BY DR. JOHN OPPIE M'CALL, BUFFALO, N. Y.

“These two subjects are considered in one chapter, because the two things can be very readily and advantageously combined. This is done by having the record chart printed on a 6x4 card which is kept in a card index system, and which thus serves as the basis of the follow-up campaign, so necessary to secure the best results in this field.

“We will consider notification and follow up first. The back of the record chart shown below may be ruled in several ways according to individual ideas. The main thing is to have columns for date of appointment, length of time consumed, and remarks. The writer does not keep the financial account on this card, and for several reasons. The card is to be laid on the bracket table while patient is in the chair. It thus serves as a record of past appointments with their possible history of delinquency on the part of the patient, as well as a ready reference to the pathological conditions in the mouth. A financial statement forms no integral part of such a reference card and is not one of the things of which we want to remind the patient, at least while in the chair. Appointments for the next sitting may be noted on these cards in the presence of the patient, and then be checked off when kept.

“The filing of these cards is not alphabetical, but by months (or by days of the month, if so desired). An

appointment having been kept, the card is filed in the month or day of the month when the patient is next to be given treatment. As the end of the month is reached, the month index card is moved to the back of the file, thus bringing forward the cards of those to be seen the following month, who will then be notified of the impending visit. Patients' cards are only moved back in the file after the treatment. Hence at the end of the month the cards of those patients who have failed to keep their appointments for any reason will be found at the front of the index, and will remain there until properly disposed of.

"The method of notification of the patient will depend partly on the patient, but the initiative in making appointments can seldom be left to the patient if good results are to be had. A notification and appointment card sent by mail is usually the best method, although with many patients the telephone accomplishes the same end with less friction. The patient should be given to understand at the time the case is started that the dentist proposes to send an appointment. If this procedure does not meet the approval of the patient, the matter can be talked over at the time and the need of such action explained, thus settling the method of notification to be followed for that patient, and avoiding possible disagreeable incidents later on. The following is the text of the card used by the writer.

Dr. John Oppie McCall begs to suggest the advisability of making an appointment for a prophylactic treatment. Experience has shown that short sittings at regular intervals are necessary, that the improvement secured by previous treatment may not be lost. Your case having been undertaken, responsibility for its success dictates this reminder.

Time has been reserved for you at.....o'clock  
.....

FIG. 27.

“With this is also enclosed a regular appointment card, which can be tucked in purse or pocket to refresh the patient’s memory.

“The method of recording pathological conditions has been developed on the basis of the needs of the general practitioner, but can be used quite as readily in a practice devoted to this field.

“The system was suggested by Dr. A. D. Black, but has been considerably modified by the writer. The underlying idea is to have a key of numbers or letters, which through their various combinations may serve to indicate and diagnose various pathological conditions.

“The chart shown here is printed on a 5x3 card, but a larger one may be used, if desired, with correspondingly larger chart. The diagnoses are recorded on it in the spaces indicating the location of the conditions recorded, by means of three letters which tell the tissue affected, the cause of the trouble, and the result shown at the time the examination is made. The three letters refer to the three columns of the key, the first letter referring to the first column, the second letter to the second column, etc.

“The key letters take up very little room, yet make as complete a record as one written in longhand. The key is readily memorized and hence records are instantly available. The reduction of records to a key system has another advantage; namely, that it is not known to the patient, and the dentist is thus spared the necessity of explaining the edges of fillings and crowns, etc., for which some colleague is responsible, and which may have caused some trouble.

## KEY TO DIAGNOSIS OF PULPAL AND PERIDONTAL LESIONS.

Pathological Condition in	Cause	Result
A. Pulp	A. Caries	A. Active hyperemia
B. Gum Margin	B. Lack of insulation	B. Passive hyperemia
C. Pericementum	C. Traumatic injury	C. Tubular calcification
	D. Denudation of root	D. Secondary dentine
	E. Abrasion	E. Pulp stones
	F. Salivary calculus	F. Hypertrophy
	G. Serumnal calculus	G. Stasis
	H. Lack of contact	H. Infection
	I. of teeth, fillings, etc.	J. Putrescence (pulp canal)
	J. Improper contact	K. Pericementitis
	of teeth, fillings, etc.	L. Abscess (incipient)
	K. Mal-occlusion	M. Abscess (with sinus)
	(other than above)	N. Recession
	L. Improper margin	O. Denudation without recession
	of filling or crown	P. Pyorrhea
	M. Improper restora- tion of occlusal surface	R. Looseness
	N. Mouth hygiene	S. Elongation
	O. Systemic distur- bance	T. Bone absorption without denudation
		U. Sensation

Thus ABD indicate a pathological condition of the pulp, due to a filling without proper thermal insulation, resulting in formation of secondary dentine. BFN indicates a lesion of the gum margin due to salivary calculus, resulting in recession. CKP indicates a peridental affection caused by mal-occlusion resulting in pyorrhea. This key can be made to serve for quite a complex diagnosis, as for instance in the case of pulpal hyperemia due to denudation of a root in the course of a progressing pyorrheal affection. The diagnosis of the pyorrheal condition will be noted as above, and the pulp trouble will be recorded thus A.PB, the period indicating that the last two letters are taken from the last column, the one indicating cause of course preceding the other. In case two





and also erosion, cavities, etc., of which a permanent record is to be kept. It is not intended for a record of operations performed. The horizontal oblong space at the top of the diagram represents the labial gum tissue, and notations in regard to that tissue or the corresponding periodental membrane are placed in it. The vertical horizontal spaces under it represent the mesial and distal soft tissues, and the horizontal oblong just above the heavy center line indicates the lingual gum tissue. The position of these spaces are reversed for the lower teeth. See section of chart enlarged below:”

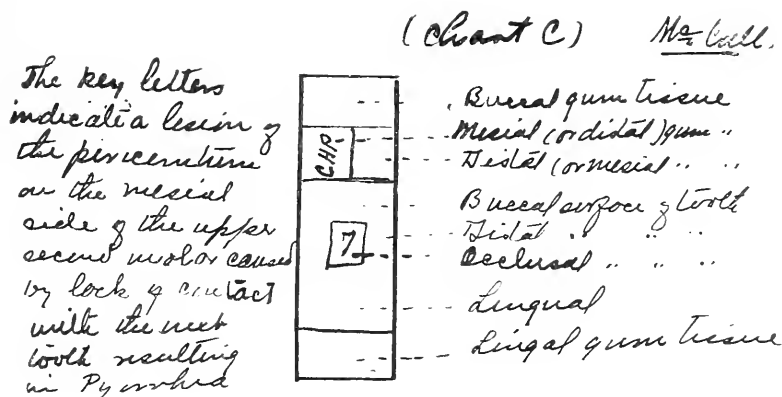


FIG. 29.

NOTIFICATION SYSTEM OF HENRY A. KELLEY, D. M. D.,  
PORTLAND, MAINE.

“My system of notification is very simple. We will consider that a patient presents himself for work and we wish to get him on to the system of prophylaxis. I give him a talk along the lines of preventive dentistry and explain the theory of prophylaxis. Having obtained his permission to put him on this system I give him a treatment and dismiss him, having first inquired as to what days of the week are best for him for appointments

and what hour in the day is preferred. I tell him I will notify him when I want to see him again. After he has gone, my secretary first enters him upon the list of my patients who are on the prophylactic treatment. I tell her how long a time I want to elapse before he has another treatment and she turns to my appointment book and enters his name as near that time as she can, considering his wishes as to day of week and hour. Then a few days, say a short week, before the time of his appointment my secretary calls him up by telephone and says, 'You desired Dr. Kelley to send you an appointment for your prophylactic treatment about this time. Now Dr. Kelley has reserved the time on such a day and such an hour for you. Will this day and hour be agreeable to you.' If he says yes, the appointment slip is mailed to him. This *must* be done to avoid the *uncertainty* of the telephone and to impress him with the importance of the appointment. Should the time reserved prove to be one not possible to him, some other appointment for prophylaxis made for some other patient, not yet notified, can be offered and his time exchanged with that patient. This is done, of course, as the secretary telephones. You will readily see with many prophylactic patients on your book you have great latitude this way.

"This is all there is to the system, except, if you have to rely upon the mail alone, you must have some system in which you get a return answer to your appointment when first sent, to know that your patient receives the appointment and to prevent loss of time owing to failure of patient to *receive* your appointment when sent. It is impossible to fix the blame for this kind of a slip-up and *you* have to assume the *loss*. One thing you have to be careful about, is that you do not in some way *break* this system. Any system is defective in that you may *think* it is working when it is not. So once in a while it is well for your secretary to check up the patients that

are on the list of those having the prophylactic treatment and see that they are *all on the appointment book somewhere*.

“I believe that the dentist should always look out for the patient and should send for him when he thinks he should make a dental call and it should not be *left to the patient* to decide when he will call upon the dentist. This system of notification for prophylaxis gives you the means of educating your patients along this idea.”

SYSTEM USED AND DESCRIBED BY DR. GILLETTE HAYDEN, OF  
COLUMBUS, OHIO.

*“Notification of Patients.*—The name, address, and telephone number of a patient beginning the regular monthly treatment are placed on a card, and the card, after having the date of the first treatment entered on it, is placed in the file box one month in advance of the date of the first treatment. For example: The patient has the first treatment January 3d. The notification card has this date entered on it, and is then placed in the file box back of the month card of February and date card of 3. On January 31st or February 1st the assistant takes all cards bearing date of February 3rd, calls each patient by telephone, and arranges the hour for the appointment.

“In every case this has proven the most satisfactory of all methods tried. The patients find it easy to arrange hours which do not conflict with other appointments which they must make, and I find less disturbance from appointments cancelled or changed to other dates. Another feature of this method is that the appointment book will have only two or three days in advance filled completely. This permits of opportunities to supply time not too far removed, to out of town cases, to emergency and other cases.

“Out of town patients are notified by mail a week in advance that they are due on such date, and that an hour (usually that given on the card as the most con-

venient for them) is reserved for them on two different days. They make the selection of the day in the reply.

“*Charges.*—Charges are made for each treatment. To those having an account, statements are mailed every six months.

“*Technique of Prophylaxis Treatment.*—In the usual cases presented each month for treatment the buccal, lingual and labial surfaces of the teeth are reached with S. S. W. Scaler No. 3, or 6 and 7 (from set of eight). The mesial and distal surfaces are reached with Smith files Nos. 13 and 14, or Townes Files 33 and 34, or 35 and 36, or with Nos. 1 to 8 of the Bates’ Scalers, according to the size of the inter-proximal space and the extent of the recession of the tissues.

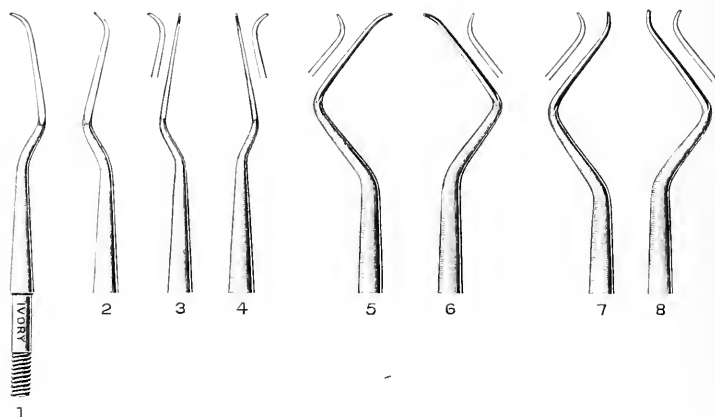


FIG. 30. BATES' SCALERS. IVORY.

“The teeth are then stained, a few at a time, with a disclosing solution containing 4 dr. each of water and glycerine, 15 gr. potassium iodide, 15 gr. zinc iodide, 5 gr. iodide crystals. For applying this solution cotton is wound around a wooden tooth pick.

“At present the Carmichael preparations are being used with satisfaction as abrasive and polisher. The cleansing powder is carried to the tooth to be polished on

a wedge-shaped orange-wood stick dipped first in phenol-sodique. A straight large sized orange wood stick is used where the surfaces of the teeth are accessible to it. A wedge shaped point carried in the right angle porte polisher is necessarily used on all surfaces not reached by the straight stick. Wherever the loss of the tissues permits the use of a small wood point on the approximal surfaces, these portions of the teeth are polished in the same manner as the other surfaces.

“Ribbon floss, X size, charged with the abrasive then passed between the contact points and carried up just under the free margin of the gum and with a sliding motion of the fingers carrying the floss the approximal surfaces are polished. With an aseptic dental napkin wrapped about the index finger and charged with fine polishing material, the final polish is given to the teeth, and a light massage to the gums.

“A spray containing a zinc chloride solution is used to complete the treatment.

“Sticks are prepared by first sharpening them to a wedge shape on a very small plane set (plane side up) in a vise, then rounding the corners and smoothing off with sand paper.”

## CHAPTER XIX.

### TRAINING OF FEMALE ASSISTANT.

WHEN SHOULD SUCH HELP BE INSTALLED IN A DENTAL OFFICE?  
THE BEST WAY TO SECURE GOOD HELP.—METHODS OF OB-  
TAINING TELEPHONE AND RECEPTION ROOM RECORDS  
TO BE USED BY FEMALE ASSISTANTS.—OFFICE  
TRAINING FOR THE POSITION OF  
DENTAL NURSE.

When the author first came to Atlanta, some fifteen years ago, there was only one white female assistant in a dental office; several dentists had negro girls. Shortly after this, some of the dentists began putting white girls into their offices, but were criticised for it. Today, such a revolution has come about that every office of any reputation has from one to three young ladies employed. Even the term "office girl" has now disappeared, and each young lady has her special duties to perform, and is entitled to the name either of assistant secretary, book-keeper, or dental nurse.

To the student who is soon to start a practice, to the young man already graduated, or to the older practitioner who has not availed himself of this great help, these pages, I hope will be of assistance.

The first question which naturally arises when the subject is brought up is, "When should such help be installed?" In answer to this, I should say that just as soon as the office is established, and the patients begin to make their appearance, then should the training of the assistant begin. In other words, I consider the trained female assistant just as necessary to the dental office as the chair or the engine.

The next question is, "From what source is such a girl to be obtained?" The advice that I give my students

in a rather semi-serious mood is that they insert in the daily newspaper exactly the description of the girl they desire, withholding, of course, their own name and address; the office will probably be flooded with applications. If they meet these pleasantly, they have placed an advertisement in just so many homes from which they may receive future patronage.

The scheme, however, which I employ, is to go to the floor-walker in some department store, and explain to him exactly my needs. My reason for this is that in his daily watch over a large number of young ladies, of the class from which we must employ the ordinary dental assistant, he has the chance to pick out the one to suit the position. If you explain to him that it is a regular position, and one where advancement can be expected, he will frequently tell you of some young lady in his employ, with whom, for the sake of allowing her to take the better position, he is willing to dispense, or, if he is not so inclined, he will generally tell you of some one, formerly employed by him, who will come up to the requirements. I have always found the girls endorsed by the floor-walker to make better employees than those secured from other sources. I have also found that applicants from newspaper ads and employment bureaus have often not been able to furnish the proper references.

In making your decision, as to the fitness of an applicant investigate her references. If she can give the pastor of her church, you may generally put it down that this counts. Always prefer one who lives at home, or with her relatives, or one who can give good reasons for not living at home. Give the preference always to the older applicant, other things being equal. The girl under nineteen years of age has no place in the dental office.

One thing that must be guarded against is the good looking girl. In my own experience, as well as that of others, I find that such a girl is not the proper applicant for the position of dental assistant or nurse. Not that

beauty itself is a detriment, but rather, it is of such charm that you will either have your patients talking about the good looking girl in your office, or it may soon lead to her taking a matrimonial venture and your assistant is lost to you as soon as she is trained.

Explain to the applicant that it will take several years of training before she can expect any considerable advance of wages. From the very first, it is best to have this understood. I have noticed that the dentist who employs a young lady and fails to have this understood at first, soon finds that the girl is trying to run the whole office. He has made so many promises that her wages have to be increased before the dentist's income is sufficient to warrant it.

The first duty of the female assistant to the dentist is that she, being a good house keeper, keep his office in order. This must be understood before she enters the office as assistant. No matter what her qualifications are, if she is not willing to go into the office, and, if needs be, scrub the blood from the floor after an operation, she is not the one for you. She must be willing and able to keep the office in order and in a clean state for, although our buildings have janitors, they do not clean the cabinets and wash stands. Many times she will be called on to clean the basins and the spittoons after a bloody operation.

The young lady should be given a key to the office, and, at least half an hour before you arrive, should open up the office, dust it, and turn on the heat. In other words, have everything ship-shape on your arrival, so that without further delay you may proceed with the patients.

In regard to her dress, I would advise that you make some distinction or difference from the ordinary dress. Now this will have to be understood at the time she takes the position for, if you wait several months, you will find that she is not willing to change. Many girls of this class



wear gaudy jewelry and gay costumes. You will have to explain to them that they are in the same position as the trained nurse and must wear simple clothing. It is better that she wear nurse's costume or some part of a nurse's uniform.

If you have secured the services of the proper young lady, and you cannot secure this proper applicant on a salary of less than \$6.00 per week, this amount will be well spent, and she can save the dentist's time, and time is money to a dentist. In addition to this, she is in a position to add to your reputation, because she will talk your business better than you can yourself.

As the majority of dentists do not employ but one young lady, I will describe some of her probable duties which she will have to perform and in which she can be of real worth to the operator.

It will be best not to try to teach her the names of the instruments the first week, but try to teach her the use of the telephone. I would suggest that the dentist himself not answer the telephone at all. Dr. Kells, for example, will not answer his telephone during office hours.

There is a good reason for this. These telephone messages are often for the purpose of breaking an engagement, objecting to an account, or complaining about work. In making engagements over the phone, you are never able to tell just how much time to leave out for such and such an operation. It is much better for the patient to come to the office for an examination. This engagement can be made by the assistant.

Dr. Conrad Deichmiller, of Los Angeles, has a telephone record sheet printed and padded. The sheets are about 6x8 inches, one sheet being used each day. He has all the messages that have come in or gone out over his telephone accurately recorded. At the end of the day he sits down and attends to each one at his leisure.

When the assistant makes engagements, I would suggest the following line of conversation:

“Yes this is No——— Dr. —————’s office. What name, please? Yes, he is here, but engaged in an operation. It will be a favor if you will give me the message as I make engagements for him.” The reason for this line of talk is that it impresses the patient that you are busy.

If the person at the other end of the line refuses to give the message, the following reply should be made, “Leave your number and I will have the Doctor call you later.” If the message is delivered, it should not be delivered to you verbally but written on a slip prepared for phone messages.

This gives you time, also, to frame the proper answer. If an engagement is to be made, the engagement book is taken to the telephone. If a bill is in question, you may take the ledger to the telephone with you.

Have it distinctly understood that your telephone is for business, and not for the young lady to talk to her gentleman friends, for some day while such a flirting conversation is going on, a patient suffering with a toothache will call some other dentist, not being willing to wait until the conversation is over.

It is best to have the assistant make all engagements which must be recorded in an engagement book. If made over the telephone, it should be verified immediately by mailing a card to the patient. This will save many lost hours.

She can make all bank deposits. She should be instructed how to write a receipt and to receive money from patients while you are busy.

She must be instructed how to handle the patients in the parlor, especially the waiting ones. She must be able to explain to them that the doctor is engaged in a difficult operation, and, in justice to the other patient, they must wait patiently. There is one thing which she must not talk about, and that is what is going on in the operating rooms. She must be, so far as talking to the patient

on this subject is concerned, a blank. Especially will she be questioned as to the Doctor's fees. *She is supposed to know nothing along this line.*

As I have said, she must be a good housekeeper. It should be her duty to see that the janitor sweeps down the walls, that the mirrors are polished each morning, that the laundry is not full of holes, and that it goes out regularly and comes in on time. She should have the purchasing of the towels, napkins, and linen, as she knows more about such things than the dentist. One of the hardest things, I find, is to get the assistant to keep an accurate laundry list, and I constantly find myself buying a new supply of linen. I find it a good plan to buy ordinary duplicate order books, and insist that the quantity of each article be put down, and that a duplicate sheet be put with the clothes ready for the laundry, then, that this slip be checked before receiving the clean linen.

If she is to be of value in assisting around the chair, she should have the quality of seeing ahead, that is, of anticipating the needs of the dentist. In other words, the dentist should not have to tell her every thing to be done. The minute the patient sits down, she should put a protecting napkin around his neck, and place a cup of some antiseptic mouth wash near at hand. She should see to it that the chair is comfortable. This done, she should step aside.

I have found it better not to keep up a line of conversation with the assistant. If a code of signals can be arranged, you will find it to an advantage, for, sometimes, you will want her to go out, and to tell her to go would defeat your purpose. One tap of the instrument could mean for her to stay, two for her to retire.

One of the most valuable adjuncts to my office is the use of a card, as shown below. As soon as patients arrive they are furnished this card by my female assistant. She sees that it is properly filled out before bringing it to operating room where it is placed in a special

holder just off from my cabinet, without disturbing me, yet where I can see, the full significance of the waiting caller at a glance.

<p>KINDLY WRITE NAME AND ADDRESS AND CHECK YOUR CALL</p>				
<p>Name_____</p>				
<p>Address_____</p>				
<p>Wishes to see</p>				
<p>O DR. ROBIN ADAIR</p>				
<p>O For Examination [Fee \$1 to \$5]</p>				
<p>O To make engagement</p>				
<p>O Have engagement</p>				
<p>O Business call</p>				
<p>O Social call</p>				
<p>Memorandum _____</p>				
<p>_____</p>				
<p>_____</p>				
<p>_____</p>				
1	2	3	4	5

FIG. 31.

This enables one to know the caller's name and address, saves introduction, and a lot of questions. If the check is on second item, then the assistant makes the engagement without disturbance. I have never yet had a book agent check anything except the business call, and all of these checks are requested to call after office hours. The numbers at the bottom denote the number of patients waiting before the last one came in. This card enables the assistant to handle a large number of callers without disturbing the dentist.

At the end of the day these cards are taken and all work done for each is figured out. I have their correct address which may be new since my last work.

Other duties for a female assistant are suggested under the head of Dental Nurse. Many of these can readily be taught to the average female assistant.

If, perchance, you can employ a young lady who is a stenographer and book-keeper, you are indeed fortunate, for there is nothing more needed in the modern dental office equipment than careful work along this line. While you will have to make the original entries of work done at your chair, she can afterwards record them in the dental ledger. At the end of the month, she can save you a great amount of time by making out the statements.

I have always found that a young lady, calling up a patient for a delinquent bill, saying that she is book-keeper for Dr. ———, and that it is time for closing up the books, and she, finding that the bill had not been paid, would like to send around for it, does more good than putting a lawyer after them.

Some dentists have their bookkeeper look up the financial rating of a new patient when he first presents himself, so that she can hand the dentist, written on a sheet of paper, just what to expect in the way of payment. Even the information given by the city or telephone directory is most valuable at this time.

#### OFFICE TRAINING FOR THE POSITION OF DENTAL NURSE.

If the dental nurse has been trained up from the dental assistant, she probably knows the patients and has their confidence and you will have less trouble in introducing this line of work into your practice. It is to be hoped that by the time this book is published, some school will have taken advantage of this opportunity by putting into its curriculum a course of training for dental nurses. As the question will be taken up more fully in the latter part of the chapter, suffice it for the

present, to give some suggestions to those who wish to train their own assistant for prophylaxis. Some simple rules may be of help; in the first place, it will not be advisable to call the assistant a dental nurse until she has had a degree of training and has become somewhat efficient. The first qualification is that she have some aim in life, and be of settled disposition, for the girl whose future is in doubt has no place in this work.

I would begin the training by placing at her disposal some of the simple books on sterilization as given for general surgery.

She should be first aid in minor surgical work, and should assist the dentist in administering anesthetics. In the first place, it is an absolute necessity that a female assistant be present when giving an anesthetic, and that she be taught along this line, for many is the time that the assistant gets stampeded more than any one else. I would let them read the small book of lectures by Dr. de Ford. In this way, they will receive the knowledge of what is expected of them under such circumstances.

The anesthetic having been determined upon, if the patient is a woman, the dentist steps from the room leaving the patient in the hands of the nurse. The nurse sees that the corset is either loose or removed, the tight collar and the neck band opened. The dental nurse can at this stage dispell the fear from the mind of the patient better than the dentist. She should put around the patient the protecting apron and have a hand spittoon within reach and a supply of towels convenient. She should be taught how to proceed in the case of an accident for, if she is not, she may desert you at a critical moment.

## CHAPTER XX.

### THE DENTAL NURSE.

VIEWS OF FONES, MERRITT, HYATT, HART, EBERSOLE, NODINE, KIRK AND SKINNER.—THE PROPOSED LAW FOR MASSACHUSETTS AS ENDORSED BY THE STATE DENTAL SOCIETY.

The trend of the times is toward trained dental assistants for oral hygiene work. Women now employed in this occupation have been designated dental nurses. In many offices they are successful in the field of prophylaxis, in the schools they are doing great work in the examination of children's mouths, and in the various clinics instituted in some countries they have proved superior to men for all work.

In order to show the present demand for dental nurses, the author has selected from the published views of some of the leading men in our profession, quotations on the subject which are given at some length.

Dr. A. C. Fones, says: "A busy practitioner cannot comfortably do this work alone, unless he limits the number of his patients to comparatively few. He must have aid, and I believe the ideal assistant for this work to be a woman. A man is not content to limit himself to this one specialty, while a woman is willing to confine her energy and skill to this one form of treatment. A woman is apt to be conscientious and painstaking in her work. She is honest and reliable and in this one form of practice, I think she is better fitted for the position of prophylactic assistant than is a man."

This view is also taken by Dr. A. H. Merritt:

"It is an innovation that has been made necessary by the evolution of dentistry. It is in the line of progress and will prevail. It may not come this year or next, but that is of little consequence, it is enough, just

now, to know that it is a part of the dentistry of the future. Like all forward movements it may meet with opposition, and that from those most directly benefited, but that is to be expected. Progress has always been made in the face of opposition.

“In the very nature of things it must go forward, and co-operating with it to the end that the public shall be better served, will go to the trained dental nurse.”

Dr. T. P. Hyatt takes up some of the various objections which have been raised against this movement:

“The work of the nurse is to keep all the exposed surfaces of the teeth in a high state of cleanliness and polish. Please understand that when I say polish I mean the kind that is secured by the methods advocated by Dr. D. D. Smith.

“I shall make no attempt to show the need of dental nurses in our dental dispensaries or schools, for the reason that once they admit their need in our offices, it must follow that the need is great and greater in the dental dispensaries and schools.

“Up to the present I have only heard three objections to passing laws permitting dental nurses, which laws would regulate the knowledge required, and prescribe the rules and regulations under which they should work.

“1st, If you want a dental nurse take a graduate dentist.

“2d, If this work is so important it should only be performed by a college graduate holding the dental degree.

“3d, To allow any one other than a doctor of dental surgery to perform any service in the mouth is to lessen the value and importance of our work.

“What work is the dental nurse expected to perform? To fill teeth? To make crowns or bridges? To cut, or remove any of the normal structure, such as tooth structure, gum or alveolus? To treat pathological conditions and prescribe drugs? If any or all of these are required



or expected of the dental nurse, then they should be graduated doctors.

“Those advocating dental nurses do not expect any of these things.

“Does any one question that the work a trained dental nurse does is important? The health, even the life of the patient depends upon the performance of these duties regardless of who does them. Their importance being admitted, with the realization that the success of an operation depends upon their being done, and done right, does the medical profession insist that only graduated doctors, or women who have secured the degree of M. D. be permitted to perform these important services?

“Another objection I have heard and with due respect to those who make it, I am free to confess my surprise and astonishment that any one for a moment can believe that it is really worth considering at all. The objection is this: If we allow young women to become trained dental nurses, a great many might start dental offices of their own. It seems absurd to think that any one could advance such an idea with any seriousness.

“Dental nurses will be of such inestimable benefit to the public, our patients, and to the uplift of our profession, that all good men should unite, and think out, and work out the best and safest plans for its accomplishment.”

Dr. Chas. E. Hart, of San Francisco, says in reference to the dental nurse: “I have two with me at present and am running two operating rooms. The uniforms that costume the nurses are made of white material and of similar substance to the ordinary surgical gown, and made up in simple form with pattern to suit the person.”

Dr. W. G. Ebersole, of Cleveland, says: “I find the lady graduate for prophylaxis work to be very satisfactory indeed. This is the beginning of the ninth year in which I have employed ladies in this field.”

Dr. A. M. Nodine, of New York, suggests that: “It

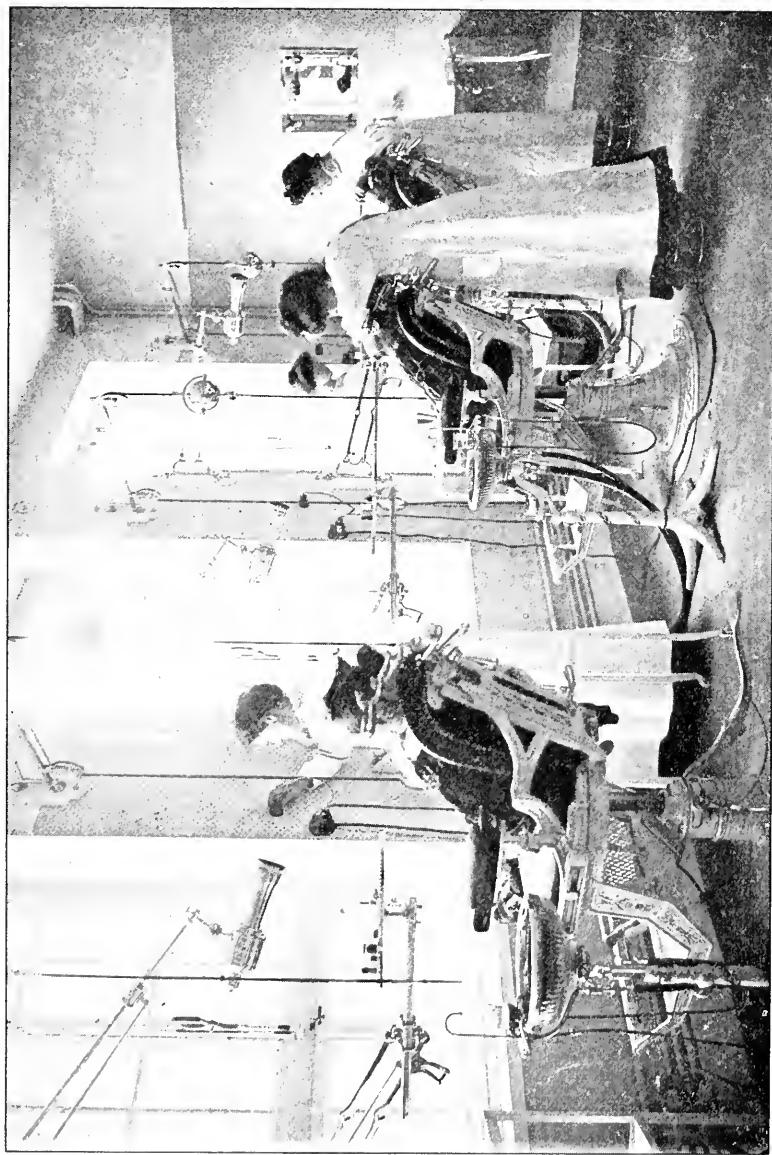


FIG. 32. MAIN OPERATING ROOM—STRASTBURG.

The dentists employed at this famous School Dispensary are women.

would be a mighty fine thing for the dental profession to achieve this accomplishment for the benefit of the millions of poor school children. If the public wakes up to the realization of the possibilities, importance, economy and practicability of the idea, it will establish the trained nurse in spite of either the apathy or protest of the dental profession."

Along the same line of prophesy, Dr. Kirk, by editorial in *Dental Cosmos*, says:

"Whatever objections may be urged at present against the employment of the dental nurse in the capacity here under consideration, the trend of the time appears to be inevitably in favor of such a course, and it is highly probable that the near future will see the dental nurse as firmly intrenched in her field of activity and as efficiently serviceable therein as today we find the usual lady assistant in our modern dental offices."

I cannot for the life of me see why the dentist will undertake even the operation of filling the teeth without first using the precaution of cleaning the field of operation. I have made it a rule in my office that before I take the patients, I turn them over to my dental nurse, who, if nothing more, mops and syringes the mouth out with antiseptic solutions. I find that the patient appreciates the work more and that it lasts longer, and, surely, it is more pleasant to work in a clean mouth than in a dirty one. Then too, when I have finished the work for the patient, he is again turned over to the nurse, who suggests the proper toilet articles such as dentrifice, silk, mouth wash, etc. If the patient desires, these are furnished him before leaving the office.

It is a good idea to keep these things for sale in the office, as it gives the nurse a chance to earn part of her salary. It also gives the nurse the opportunity of instructing the patients in the manner of brushing their teeth. Few patients know this, and the dentist is too

busy to show them properly, as it takes some fifteen or twenty minutes.

You will find in the case of the younger patients, that if they had to be led in to you first, would probably be afraid and hard to manage. The dental nurse can take these children for a few sittings and, by cleaning up their teeth and teaching them something about oral hygiene, will be able to turn them over to you, with all fears dispelled, for the further treatment of their teeth.

Women are particularly adapted to the work of prophylaxis in that the sense of touch is more delicate, and, just as they are willing to spend hours working on a small handkerchief, so they will be willing to work for a long time removing stains from teeth while the dentist devotes his time to other work.

There are many patients who would avail themselves of the opportunity for prophylaxis, but who are not willing to pay a dentist for his time. Thus the dental nurse enables these to have this treatment at a smaller fee, as the dentist's time is worth from \$5.00 to \$10.00 per hour, the nurse's is worth from \$1.00 to \$5.00 per hour. She can spend more time than if the dentist did all the work himself. In the course of time, the patient begins to appreciate this class of dental work, and will be willing to pay regular fees.

Several years ago when I first determined to train a nurse for some of my work I advertised, and talked with 150 applicants before I accepted a middle-aged trained nurse who now does the larger part of this work in my office. She first helped me at the chair, then took a course by reading everything published on the subject; she also brought in her kinsfolk's children and her friends to practice on. On regular patients I would do the difficult part and have her finish the treatment. Thus she became proficient and self-confident, while the patients are delighted with the novelty of the idea.

DR. ROBIN ADAIR

RESPECTFULLY ANNOUNCES TO HIS PATIENTS  
THE SERVICES OF A TRAINED DENTAL NURSE  
TO PRACTICE ORAL PROPHYLAXIS UNDER HIS  
DIRECTION AT A MINIMUM FEE.  
THE TRAINING OF CHILDREN IN THE PROPER  
CARE OF THEIR TEETH HER SPECIALTY.

Phone Main 2442.

The above card was sent to all my patients to let them know about the dental nurse. When I saw she was a success I quit the work, except to those who were willing to pay well for my service, and sent out, as "per suggestion by Bro. Bill," a card like this:

DR. ROBIN ADAIR

RESPECTFULLY ANNOUNCES THAT ON DECEMBER  
THE FIRST HIS FEES FOR ORAL PROPHY-  
LAXIS WILL BE ADVANCED.

November 26, 1909.

In regard to the dental nurse I can only say that when the proper help is secured it not only adds dignity to the dental office, but also enlarges the field of the dentist.

To those who contemplate taking a stand for the legal status of female dental assistants the following suggestions were given by Dr. F. H. Skinner, of Chicago, after a lengthy conference with him on this subject. In view of the fact that we have no institution where instruction is given the nurses he gives a plan whereby they may be trained and legalized.

AN ACT TO REGULATE THE PRACTICE OF ORAL PROPHYLAXIS BY  
A REGISTERED DENTAL ASSISTANT, BY F. H. SKINNER, D. D. S.  
REQUIREMENTS FOR APPLICATION.

1. Application for license must be made to the State Board of Dental Examiners, and signed by a regular registered dental practitioner.

2. Party for whom application is made must be twenty-one years old and graduated from an accredited high school.

3. Said party must have had at least three years experience as a dental assistant under a licensed dental practitioner who vouches for applicant's efficiency and a certain knowledge of the few drugs and medicines used in oral prophylaxis.

#### LICENSE.

Upon such application being presented to the State Board of Dental Examiners, that body, at its discretion, shall issue, or cause to be issued, a license permitting the party named to practice oral prophylaxis only in the office of the practitioner who signs the application, or such place as he may request. (As a call at a home to give an oral prophylaxis treatment, in case of sickness.)

The State Board has a right to satisfy itself as to the qualifications of the applicant, as to the education, age and character, as well as by examination as to ability, and if deemed advisable, require applicant to give a clinic to satisfy itself, or it may issue license solely upon the reputation of the dental practitioner who signs the application.

#### FEES.

The fee for said license shall be \$10.00 (ten dollars) and shall be subject to the same registration and fees as the license of a practicing dentist.

Should the party to whom license is issued leave the employ of the practitioner who signs the application, said license becomes null and void, but a new license may be issued without examination should the party enter the employ of another dentist. The object of this is to have this work done always under the supervision or control of a regular dental practitioner.

A committee from the Massachusetts Dental Society drew up and presented a bill for legislative enactment

giving a legal standing for the dental nurse and the methods of control. The object of this bill was thus urged by the committee:

“The object of the bill is to secure for the dental profession the help in practice furnished physicians and surgeons. By our present dental law the dentist cannot legally have this needed assistance. Even the registered nurse while doing work among the poor, cannot examine the mouth of a child suffering with toothache and put in anything to relieve the child’s distress without breaking the dental law. So slight an operation as tying a piece of silk or putting a piece of tape between teeth for wedging, is illegal when not done by a registered dentist. No one but a *registered dentist* may clean or polish teeth. This makes it impossible for children’s teeth to be properly cared for, as the busy dentist cannot devote time enough to this operation, and in order to have it done as often as needed, it becomes a financial burden for a family of limited income at the price a registered dentist must charge for his time. In the public clinic the registered dentist can do practically nothing in polishing the children’s teeth.

“The prophylactic care of children’s teeth is therefore not practicable with our present legal conditions. In order that the children may have this proper care, the public needs a dental nurse. This nurse need not have at present the extended training that is given a registered nurse. The training that she will receive in the training schools will give the dental profession a standard of service that we have never had. There are many young women employed in the dental offices of our State who by being trained and being registered as dental nurses would be of invaluable aid to their employers. No one need, however, employ such a nurse. The regular office assistant will be used as formerly, only she may not do the things the registered dental nurse may do, and of course she will lack the training.”

HOUSE .... No. 1566

The Commonwealth of Massachusetts  
In the Year One Thousand Nine Hundred and Twelve.

## AN ACT

To amend the law regulating the practice of dentistry.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. Any person who is eighteen years of age or over and in the opinion of the Board of good moral character, upon payment of a fee of five dollars, which shall not be returned to him, may upon application be examined by the Board of Registration in Dentistry and be licensed by said Board as provided in Section six hereof to perform such service as a dental nurse as shall be specified in his license. Except as provided in Section two in this Act, the person desiring such registration shall specify in his application the name and address of the registered dentist by whom he is to be employed, and this application shall be approved in writing by such registered dentist. No registered dentist shall have at one time more than one registered dental nurse in his employment. No business firm or private incorporated dental company shall employ more than one registered dental nurse at one time, in any office managed or owned by it. Such license shall be valid for one year from the date thereof unless revoked by said Board for the violation of the conditions thereof. Any license issued under the provisions of this Section may be renewed without further examination in the discretion of the Board, from year to year, upon payment of a fee of five dollars.

SEC. 2. Any person who is eighteen years of age or over and in the opinion of the Board of good moral character may, upon application, be examined by said Board and licensed as aforesaid to serve as a dental nurse in any of the public educational or charitable institutions in the state approved by said Board, which institution shall be specified in the license, provided that this application shall be endorsed by the authorized officers of such institution. Such license shall be limited to the performance of service in connection with institutions of the character specified therein and may be renewed from year to year without further examination and without the payment of any fee therefor. Any number of dental nurses may be licensed for services in connection with any such institution. Any license issued under the provisions of this Section shall expire forthwith whenever the registered dental nurse shall cease to render such services solely for institutions of the character specified in the license.

SEC. 3. A registered dental nurse shall be licensed to perform only such duties as shall be specified in his license and solely in the office and under the direction of a registered dentist. No dental nurse shall



be licensed to perform any service other than the examination, wedging and cleaning exposed surfaces of teeth, inserting and changing dressings in teeth for the relief of pain and assisting a registered dentist during the performance of his dental operations.

SEC. 4. Any member of said Board or its agent may at any time visit any office or institution in which a licensed dental nurse shall be employed and make such examination as he shall see fit in order to determine whether the provisions of the laws regulating the practice of dentistry and dental nursing have been complied with.

SEC. 5. Any licensed dental nurse changing employers must notify the Board forthwith of such change and also of the name and address of the dentist by whom he is to be employed.

SEC. 6. Whenever by the terms of such license the holder thereof shall be authorized to perform all of the services specified in Section three hereof, and shall have the title of Registered Nurse, such holder shall have the right to use the title Registered Dental Nurse. An applicant who fails to pass an examination satisfactory to the Board, and is therefore refused registration, shall be entitled within one year after such refusal to a re-examination at a meeting of the Board, called for the examination of applicants without the payment of an additional fee.

SEC. 7. The Board may, after a hearing, by a vote of a majority of its members, annul the registration and, without a hearing may, annul the registration and cancel the license of a dental nurse who has been found guilty of a crime or misdemeanor.

SEC. 8. The Board shall have power to register in like manner, without examination, any person who has been registered as a professional dental nurse in another state under laws which in the opinion of the Board maintain a standard substantially equivalent to that of this Act.

SEC. 9. The Board shall investigate all complaints of violation of the provisions of this Act, and report the same to the proper prosecuting officers.

SEC. 10. Whoever, not being authorized to practice as a registered dental nurse within this Commonwealth, practices or attempts to practice as a registered dental nurse, or uses the abbreviation R. D. N., or any other words, letters or figures to indicate that the person using the same is a registered dental nurse, shall for each offense be punished by a fine of not more than one hundred dollars. Whoever becomes registered or attempts to become registered, or whoever practices or attempts to practice as a registered dental nurse under a false or assumed name, shall for each offense be punished by a fine of not more than one hundred dollars, or by imprisonment for three months, or by both such fine and imprisonment.

SEC. 11. This Act shall take effect upon its passage.

## CHAPTER XXI.

### TEACHING OF ORAL HYGIENE, PROPHYLAXIS AND PYORRHEA IN DENTAL COLLEGES.

PRACTICAL METHODS EMPLOYED BY THE AUTHOR.—THE  
RESULTS OBTAINED.—THE NEED OF SUCH INSTRUCTION.

The subjects of oral hygiene, prophylaxis and pyorrhea are receiving more and more attention each year in our dental colleges. Having taught these subjects for several years, I give some suggestions that may prove of value to those just beginning the work.

If practical, the course should be divided as follows: Freshmen receive the course on oral hygiene, the Juniors prophylaxis and the Seniors pyorrhea. In order to make the lectures of a personal character and to elicit personal interest, it is best to make a personal examination of the mouths of each class and tabulate the result. Call attention to any defect or treatment needed. The students should be called into a private room, one at a time, for the examination. Before final examinations another examination should be made and credit mark given for any improvement. If the lectures have been interesting, this makes the work of practical value. If this is not done, or where no lectures have been given on these subjects, we find many Seniors going out with their mouths in a condition which is a disgrace to the profession, which they will represent.

At the first lecture take into the hall a new tooth-brush, floss silk, quill tooth pick and dentifrice. Ask for a volunteer from the class to come to the rostrum. Give him the tooth brush with the request that he brush his teeth exactly as he practiced at home. He generally will make a poor showing. Then take the brush in your own hands and brush the teeth correctly. See that the student can do this correctly before he leaves the stand. Then ex-

plain to the class that if a student of dentistry does not know how to brush his teeth, they can expect their patients to know less. The use of the silk and other accessories are also shown. The demonstration of the proper method of rinsing the mouth is sometimes a revelation even to a Senior student.

In teaching prophylaxis, it is well to divide the class into sections of twenty each. Take one section into the dental infirmary. Seat one-half of them in dental chairs and have the other ten get out their prophylaxis instruments and go to work on those seated. Go from chair to chair, showing each individually how to hold their instruments. At the next clinic the men who did the work before are seated in the chairs and the others put to work. This may be repeated with each section until every member of the class has his mouth put in good condition. Many of their gums will be cut with instruments, tissues lacerated and plenty of calculus left on their teeth. However, it will be worth all the discomfort they endure, for it teaches them the best lesson possible. As you proceed with the course induce the boys to take monthly prophylaxis treatments among themselves.

One of the most convincing arguments for a permanent interest is for the teacher to exhibit some of his private patients who have been on prophylaxis for some time, just to show them what can be accomplished.

In teaching pyorrhea, the cases which were found in the examination of the students' mouths should be used for clinical material, so that the various treatments can be given under their direct observation. If several cases be under treatment they should be turned over to the students for dressing and applications and the progress closely watched by the professor. No set method of dealing with this lesion should be given, but demonstrate all procedures which seem to have any virtue.

One session the writer noticed that the students of the Senior class were lacking in practical application of his

efforts to have them carry off the spirit as well as the letter of his lectures. This following notice was posted in the bulletin:

“TO THE SENIOR CLASS:

“Without further notice, an examination of the mouths of the Senior Class is soon to be made and the mark given at this time will count on the final examination. Any one presenting an unclean or diseased mouth will not receive my name on his diploma.”

The report soon came to me from the demonstrator in the Infirmary that he could not get any work out of the boys, because they were so busy cleaning up each other's mouths. When the graduating exercises took place, it was my pleasure to know that the Senior Class presented the cleanest mouths of any class that had ever gone out of the institution, and I believed that many of them would be future missionaries along this line of work. Later results have shown that this supposition was correct, for I have heard of the members of the class giving lectures before the schools in the various towns and leading in school inspection work. Most colleges now have some lectures on this subject, and a few of them have regular chairs, and it is to be hoped that a greater number will see the wisdom of giving this subject the importance which it deserves.

Of interest, showing the trend of the times towards teaching this subject in the dental colleges, is the following statement from Dr. G. V. Black, of the Northwestern Dental University School, who, in a letter to me, April 4, 1913, says, “I have been silent on this subject for a number of years. In fact, I have not written anything since the article for the *American System of Dentistry*, until quite recently, but a couple of years ago I re-arranged the curriculum somewhat, and took this subject myself, on purpose to have the opportunity of giving my time to it, and of finally writing what I might wish to say.”

Dr. N. S. Hoff, of the University of Michigan, in

answer to my inquiry of his views on this subject, wrote me March 1, 1913, "The need for this work is tremendous, and I sometimes feel as though it is a particular form of work which will have to be done independent of the dental college work, as I am confident when it is taken into dental college work, it will absorb so much of the time that other forms of instruction will suffer, just as I have found it to do in private practice. It is impractical to do this work in connection with the general practice for the reason that it absorbs so much time. The dentist becomes so much interested in it that he is not willing to allow any patient to go until he has given him a complete treatment, and when this is undertaken, necessarily other lines of work must be set aside."

Dr. C. M. Gearhart, chairman of the oral hygiene section of the National Dental Association for 1912, writes me an interesting letter, from which I quote as follows:

"I have been struggling for years teaching 'Oral Hygiene and Prophylaxis' in Georgetown University without a text-book. Oral hygiene covers such a multitude of sins that I have found it necessary, in a way, to have to review, or rather lapse over subjects taught by other men in Georgetown, in order to make the subject worthy of giving it a course. It has always seemed to me that the teaching of oral hygiene is something more than merely explaining to students that they should keep their own, and advise their patients to keep their mouths clean."

It is hoped that this book will, in some degree, meet the requirements along this line, and that it may stimulate other teachers of this subject to record their experiences and methods of teaching.



## PART III.

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A PRACTICAL DESCRIPTION OF PYORRHEA ALVEOLARIS  
AND ITS TREATMENT





## CHAPTER XXII.

### PYORRHEA ALVEOLARIS.

SYNONYMS.—DEFINITION.—CAUSES.

WHAT IS TARTAR AND ITS FORMATION?—KINDS OF CALCULI,  
AND DEPOSITS.—BLACK'S THEORY.

Authorities in general medicine and surgery have in a scientific way decided upon a certain frame work for the description of any disease. Failure to adhere to this frame work by dentists is one of the reasons why we have not come upon any common ground in our writing on pyorrhea. Having received reprints by the hundred, written by the most prominent men in the profession, I find that they vary greatly in describing pyorrhea and do not adhere to the commonly accepted methods of description. The frame work used for the description of pyorrhea should be: 1, synonyms; 2, definition; 3, causes; 4, pathological anatomy; 5, symptoms; 6, diagnosis; 7, prognosis; 8, treatment.

If we notice the various reprints on pyorrhea, we will find that in some of them the prognosis is described first, probably the same paper ending with pathological anatomy. It would greatly simplify matters if writers and teachers of this subject would describe it in a systematic manner.

#### SYNONYMS.

Here we have such a large and unfortunate list that the student is completely bewildered in his selection:

Pyorrhea alveolaris, Riggs' disease (Bishop), infectious alveolitis, cemento periostitis, calcic inflammation (Black), blenorrrhea alveolaris, hematogenic pericemen-

titis, phagadenic pericementitis (Black), chronic alveolitis, interstitial gingivitis (Talbot), periostitis dentales (Schiff), alveolar pyorrhea (Smith), chronic alveolar osteomyelitis (Medalia), oral sepsis (Hunter, of London). Edematous peridentitis, hypertrophic peridentitis, suppurative peridentitis, gangrenous peridentitis (Hoff).

Dr. H. M. Fletcher, of Cincinnati, urges the adoption of the following classification:

Initial or simple alveolitis, non-suppurative alveolitis, suppurative alveolitis, necrotic alveolitis, acute alveolitis, descriptive subdivisions:

Chronic non-suppurative alveolitis,

Chronic suppurative alveolitis,

Necrotic non-suppurative alveolitis (always chronic),

Necrotic suppurative alveolitis, (nearly always chronic but may be acute).

Zentler, of New York, suggested the name alveolar-dental-arthritis, classifying it as the primary, secondary and tertiary dental arthritis.

Dr. M. L. Rhein classifies pyorrhea by the addition of adjectives stating the name of the disease which he thinks causes the symptoms i. e. "Diabetic Pyorrhea" and "Tubercular Pyorrhea." Prof. W. D. Miller, in his text book on pyorrhea, adopted this classification.

Dr. Rehwinkel first called it pyorrhea alveolaris in 1877, in the city of Chicago, although the name was used in France as far back as 1870.

Black called it phagadenic pericementitis in 1882.

The author is not convinced that any one of the above should be accepted. Common usage at the present time almost compels us to use the term pyorrhea alveolaris until a better term is suggested and adopted.

In the South many dentists prefer the term "Riggs' Disease," because the older practitioners believed that the honor for the beginning of the surgical work should

be given to Dr. John M. Riggs, of Hartford, Conn., as he was the first man to advocate a treatment or even to say that it could be cured. The same sort of sentiment prompted this naming as the calling of interstitial nephritis "Bright's Disease." In later-day nomenclature, the fault of this method of adopting names has been realized and efforts are being made to change many of them.

## DEFINITION.

The late Chas. B. Atkinson, of New York, defines this condition as "a disease following congestion of the myxomatous tissue of the oral cavity, affecting with wide range of loss, the gingivæ, alveoli, and teeth, from slight recession of the gums to entire solution of alveolus, and the consequent loss of tooth or teeth involved; therefore, perhaps more properly 'pyogenic gingivitis.'"

Dr. C. N. Peirce describes it as follows: "A chronic inflammation of the pericemental membrane, attended by a congested, spongy and tumefied condition of the gums and mucous membrane, and usually accompanied by a persistent flow of pus from the alveolar sockets. In the progress of the disease the alveolar process, under the influence of engorgement of the periosteal vessels, becomes involved and eventually undergoes atrophy or absorption, leading to an exfoliation of practically normal teeth," and ascribes its etiology to the uric acid diathesis of the patient.

Dr. G. V. Black describes it as "a specific infectious inflammation having its beginning in the gingivæ, and accompanied with the destruction of the peridental membranes and alveolar walls," and while not committing himself, says that probably it is caused by the presence of some peculiar form of micro-organism and that it is infectious.

Dr. Rhein defines it as follows: "While pyorrhea alveolaris literally means a discharge of pus from the

alveolus, the simplest definition of its pathogenic condition commonly accepted under the term would be that it represents a diseased condition of the peridental region due to impaired nutrition."

Dr. D. D. Smith says, "mouth pyorrhea is a disease of uncleanness."

Dr. W. J. Younger preferred the name pyorrhea alveolaris and gave this definition: "Pyorrhea alveolaris is characterized by an inflammation of the gums and a deposit of characteristic greenish gray or slate colored tartar and the wasting of the alveoli accompanied by the formation of pus and pus pockets between the tooth and alveolus; the disease being due, as I believe, to a specific bacillus. The disease is chronic in its duration and results in the ultimate loss of the teeth. This slate colored incrustation of which I have spoken, I consider pathognomonic of the disease."

Pickerill in his book on "Oral Sepsis" gives the following definition:

"Pyorrhea alveolaris is essentially a suppurative process occurring in the joint around the tooth between it and the jaw bone; it may be localized or general, but usually is found associated with groups of several contiguous teeth."

#### CAUSES.

The etiology of pyorrhea is given as local and constitutional. A few years ago the latter was advocated by many of the leading men of the profession and many valuable papers were published and read upon "Uric Acid Diathesis," "Rheumatism," etc., as the etiologic factor, but today those who are making the greatest success of their treatment are almost unanimous in their opinion that local causes would be decided upon as the greatest factor.

It is not denied that the general systemic condition of the patient has an influence and must be looked into

and treated, but this should be considered as only a predisposing factor or complication of the pyorrhea. Personally, the author believes that if a mouth is maintained in a good condition, with the absence of local causes hereafter mentioned, no systemic disorder would ever produce a case of alveolar pyorrhea. In other words, there are no systemic reasons for the cause of pyorrhea other than those which may predispose to any disease.

Younger claims that temperament has no bearing on this disease, while Smith opposes this view with the declaration that pyorrhea never develops in the purely sanguine but always in the bilious, the lymphatic, and the nervous temperament, impaired nutrition, heredity, constitutional disorders, excessive lime salt secretion, uric acid salts, scurvy, luxury and modern degeneracy, sedentary habits, toxic agents introduced into the system, chronic infections, and the eruptive fevers have also been named as causative agents of pyorrhea alveolaris.

In answer to those who hold the above causes Hutchinson says:

“I have no doubt that in cases where diabetes, syphilis or other serious systemic disorders are coincident with pyorrhea, the pyorrhea antedates the constitutional disorder and has been accentuated but not caused by such disorder. If such mouths had always been under prophylactic treatment I believe there would be no pyorrhea. The amount of tissue lost, both hard and soft, indicates that the process of destruction has covered a period of many years and could not have taken place within a comparatively short time. Usually pyorrhea in some stage exists long before it becomes manifest to either the patient or the dentist, and so the error of believing it to be of recent occurrence is often made.”

The initial cause of pyorrhea is sometimes so small and simple as to be overlooked. As before stated, the object of this book is to be of a practical value and only

the causes that we positively know and see every day are given:

1st, Deep interlocking cusps on bridge work, causing too great an irritation on the abutments and setting up inflammation in the membrane supporting them, finally giving rise to pyorrheal conditions.

2d, Wing bridges.

3d, Bad bridge work.

4th, Partial dentures which may have any kind of swing on one tooth.

5th, Ligatures, clamps, wedges in ordinary dental operations where the confusion of the gum margin is not treated after their removal.

6th, Mal-occlusions of natural cusps, fillings, or crowns. Whether mal-occlusion is a cause or result of pyorrhea, there can be no doubt about its importance, no matter what the treatment may be. One of the greatest aids is in grinding down markedly prominent cusps and in putting out of action those teeth which are weakened by this disease. The best method of determining this is to place the index finger longitudinally across the teeth and then let the patient close the mouth, and shake the teeth. If this discloses the fact that the affected tooth is being moved to a greater extent than the others, it is an indication that too much stress is being placed thereon.

Dr. R. G. Hutchinson, Jr., of New York, says: "Of late I have been more impressed with the importance of mal-occlusion, either general or localized, as a prime factor in the establishment of pyorrhea, and my first attention is given to this correction by grinding."

7th, In the disturbance of the contact point of the teeth, whether it be from a small separation, or from malshaped points, allowing food fibres to pack in and gain a point of vantage for future destruction. A large

number of pyorrhea pockets are undoubtedly formed in this way, the so-called "meat holes."

8th, One of the most unbearable forms of pain in the mouth is caused by the abuse of wood tooth picks and floss silk. Splinters of the picks break off in the mouth and, when the patient comes for treatment, we sometimes are not able to find the cause of the inflammation. This, in time, causes loosening of the point of contact, allowing further inroads into these inflamed surfaces.

9th, Any mechanical irritation lodged under the free margin of the gums surrounding the tooth will set up initial lesions. Shedding bristles from tooth brushes, small seeds, grit (possibly left from cleaning the teeth), skin flakes from vegetables or fruit—any one may cause this. The gum, being unable to free itself from this irritation, inflammation follows, affecting the peridental attachment and the alveolus.

10th, Tartar formation: While it is true some cases of pyorrhea do exist where, seemingly there is no deposit of tartar present, they are in such minority as to be a rare exception. Such cases may at one time have had this formation; furthermore, such minute particles can start trouble that we cannot say with certainty but that all cases have some form of tartar which must be removed in our treatment. In fact, the greatest factor in the successful treatment of this condition is the finding and complete removal of tartar.

11th, Uncleanliness: Last and probably the most important and most frequent cause of pyorrhea is that at some period of the patient's life there was a lack of intelligent care of the mouth. A volume might be written on the causes of pyorrhea, but we have to admit that the greatest factor we have to deal with is uncleanliness of the mouth. The first section of this book deals in full with this cause.

## WHAT IS TARTAR AND HOW DOES IT FORM?

Tartar is a concreting material, either secreted or concreted in the mouth from the saliva, which is deposited on the teeth or artificial dentures. Various hypotheses have been advanced in explanation of these deposits. We do know that the bulk is composed of calcium phosphate and carbonate, and that certain places are more liable than others to the accumulations. One theory is that the saliva holds these salts in a very unstable suspension, and, in the presence of air, carbonic acid gas is liberated and the calcium salt precipitated.

Burchard claimed that the saliva, as manufactured by the glands, is of alkaline reaction, holding in solution the salts of calcium. His theory was that in most mouths the reaction is acid, the coming together of these two opposite chemical compositions results in a precipitation which is insoluble in the acid medium.

A third theory is one of crystallization. Younger holds the view that some bacteria form a nucleus or nidus about which layer after layer of these salts are precipitated; especially does he believe this to be the cause of the formation of serumal calculus, the idea being that it was just the same as the crystallization of syrup starting around a thread. These theories seem to have resulted from the observation that calculus formation in other parts of the body generally contains a lump of bacteria around which they have been formed.

The fourth hypothesis is that the calcium salts are held in suspension, and when the saliva stagnates, the heavier substances collect in favored situations.

## KINDS OF CALCULI AND DEPOSITS.

There are probably many variations in the character of the deposits on teeth, but the most important from a pyorrhea standpoint are as follows:



1st, Granular mass, less hard than calcium sulphate. This is generally found in large quantities on the lingual sides of inferior incisors and on the buccal surfaces of the upper molars.

2d, Concretions found below the gum margin; color, light yellow to dark green. The light concretion is soft while the dark one is hard. Some have thought that the greenish scales around the margin of the gums might be caused by the disturbance of the gingival glands. Patterson says, "These deposits are from purulent matter and are the sequence of irritation and inflammation from the various local causes referred to. They are not precedent to a lesion but invariably are subsequent to irritation and exudation."

3d, Serumal calculus.

4th, Sordes is a soft, creamy, pearl gray deposit on the surface of the teeth and differs from tartar in that it does not concrete, though it is sometimes mixed with a form of tartar and partially concreted.

We think the reason for the salivary calculus deposited on the upper molars being softer than in other locations is that the parotid gland does not secrete mucin.

The red or greenish color of the second variety named is given by the escape of heamatin of red blood corpuscles due to the rupture of small blood vessels by mechanical irritation of the deposit. The extreme hardness and brittleness which we often find is probably due to the absorption of uric acid from the blood. It is supposed that this occurs only with those patients whose system contains a large amount of uric acid. From this observation many dentists at one time believed that the whole cause of pyorrhea could be explained by the theory of the uric acid diathesis; but this theory of its etiology has been discarded by the majority of the dental and medical profession.

The third variety of calculus was first called serumal by Brown, of Georgia. This secretion and concreting

material is supposed to be formed from some break in the peridental membrane and effusion of the serum of the blood. If this theory is correct the process has never been successfully explained.

At the point of location of the other varieties of tartar we have direct contact with the saliva, but with the serumal calculus it is claimed that the formation may take place in the peridental membrane without any show of external communication with the saliva of the mouth. The very existence of such a formation has been denied by many, who claim that when calculus is found on a tooth there is always some external opening which can be found by careful probing with a small instrument under the cervical edge of the gum. Nash advanced some strong arguments on the impossibility of the formation of serumal calculus or tophus in the peridental membrane.

#### BLACK'S THEORY.

Dr. G. V. Black has recently reported some interesting experiments about the formation of tartar. His theory is that the susceptible mouth contains a material which he terms the "agglutinating substance." This substance is transparent and slightly sticky. This serves to gather and hold particles of calcium salts which are precipitated from the saliva. This gradually hardens after a few days. In his personal experiment with a slot cut in his artificial set of teeth he advances the idea that salivary calculus may be controlled to a certain extent by the diet. Eating too much caused him to have a greater deposit, while the use of a saline cathartic would cause a cessation of deposits for a week or more.

Before the advent of prophylaxis, dentists were paying most of their respects to the hard deposits as the principal factor in dental lesions but recently we believe this to be a mistaken idea, and that the soft deposits are more vicious in their action on the soft tissues. In fact,

upon the removal of large quantities of tartar from the teeth, we frequently find the tooth in a well preserved state, and the gums comparatively healthy, but we never find this to be the case when the sordes or soft deposits are removed, because the latter contain a great amount of infection; we sometimes find the tooth in a leathery condition and the soft tissues always in a state of inflammation.

## CHAPTER XXIII.

### PATHOLOGY OF PYORRHEA ALVEOLARIS.

RECESSION AND CONGESTION OF THE GUMS.—THE CHANGES IN  
THE PERIDONTAL MEMBRANE AND ALVEOLAR PROCESS.—  
TOOTH ROOT ABSORPTION.—FORMATION OF PUS  
AND POCKETS.—ALVEOLAR ABSCESS IN PYORRHEA.

The pathology of dentistry should be considered in the same manner as the pathology of medicine and surgical diseases. In dentistry the attempt to bring up a different pathology has been due to a lack of proper knowledge and observation.

In taking up the work of pyorrhea, the dentist must have an accurate knowledge of normal conditions in order to be able to detect a deviation therefrom. Also, a complete knowledge of the histology of the gums, teeth, and maxilla is imperative.

First should be noted the appearance and color of the normal gum. We will note that there is no tumefaction of the gum margin; also that the gum margin clings to the teeth at the enamel margin, completely surrounding the tooth at the insertion into the bone.

The teeth most often affected by pyorrhea seem to be the lower incisors. Next in the order of frequency, the superior molars and bicuspid; then the inferior molars and bicuspid; the superior incisors; lastly, the upper cuspids.

#### RECESSION AND CONGESTION OF THE GUMS.

Recession of the gums is not necessarily a feature of the pathology of pyorrhea, although some medical men and many of the laity have at times mistaken the reces-

sion of the gums, especially on the upper cuspids, for pyorrhea. This recession is the result of not receiving circulation to keep up peridental life and a constant diminution of the thickness of the alveolus and the hardness of the cementum. This structure either moulds into the dentine or recedes towards the root when conditions are abnormal.

The recession of the gums at the cervical margin brings most patients to the dentist for the treatment of pyorrhea. At this stage we find the peridental membrane either exposed or destroyed in part, forming a hot bed for the culture of bacteria which continue their action in destroying the alveolus and inflaming the periosteum. This recession is caused by the falling in, as it were, of the supporting structures.

Although the patient worries about the gums, it is oftentimes the least affected structure and, if the infection be removed, soon resumes its normal appearance and function as a protection to the structures which underlie it. Just as often do we find the opposite picture. Instead of recession we find a swelling and congestion. On squeezing the gums, pus will generally exude. On the other hand, I have seen cases where there seems to be no pus; but there is infection, and pus either has been or will be the next step in the progress of the disease.

Probably one of the most constant diagnostic points in pyorrhea is the tumefaction of the gum tissues. The extent of this tumefaction may be from a few lines in width at the gum margin to a heavy roll of tissue extending the full breadth of the roots of the teeth. This tumefactory condition may be hard and firm, and when this is the case, the color of the tissue will be a light lilac or, if the pocket beneath be extensive, of purplish tint. However, this tissue may present a very different clinical picture in that the tissue may be very soft and fluffy, bleeding upon slight irritation, as in brushing the teeth.

In the latter condition we find more pus, we also find that the teeth are looser than in the former condition described.

Often the gum is filled with inflammatory exudate, giving a rich crimson (chronic state bluish) color, due to the accumulation of cells in the connective tissue.

This gum bleeds at the slightest touch. Inflammation may extend only to periosteum or into the alveolus. If the condition of swelling continues and the gum continues flabby about the tooth, like hypertrophied tissue, the best treatment is the surgical trimming with knife or scissors.

When the patients are about to be dismissed after treatment, they often call attention to the fact that their gums have receded more than they did previous to treatment. This seems to them a most serious question, and the dentist should be very careful to convince the patients that such recession always follows a correct treatment, because of a reduction of the inflammation and a return of the gum to its natural thickness. In addition to this, the alveolus surrounding the teeth is now much less than before disease, or, having been removed in the surgical work, gives the gum covering it the opportunity to fall further away from the crown of the tooth.

This recession, if extensive, may, in the future, cause trouble for the reason that the flap of gum tissue which normally protected the interproximal space from food impactions may be too low to protect this space against further inflammation and infection from packing. It must be well understood that in these cases the patient should present at frequent intervals and have such spaces cleaned by their dentist.

#### THE PERIDONTAL MEMBRANE.

The object of the peridental membrane is to transmit nourishment to the teeth and to furnish elasticity and a cushion under force, or a sling in which the teeth are held.

Dentists have been taught that the peridental membrane partook more of the character of a periosteum, but later investigators claim this structure to be a true alveolar-dental ligament. Microscopical examination reveals solid bundles of fibres of Sharpey which extend from the tooth out into the alveolar process. The insertion is about the same as ligamentous insertion into bone in other parts of the body. These fibres of Sharpey, according to several authorities, form circular rings which suspend the tooth in its socket.

The peridental membrane has for one of its purposes the nutrition of the cementum. This membrane may be separated from the tooth or completely absorbed at the time of the first injury, be it tartar, bad dentistry or infection.

Healthy strong teeth are often exfoliated from the alveolus because of hypernutrition, which results in deposits in the substance of this membrane making it resemble the cementum, or the membrane may be so feeble in its function as to shut off nutrition with like result. Cases of loose teeth from this cause have frequently been diagnosed pyorrhea.

We must bear in mind that an edentulous jaw never presents a pyorrheal condition, and that the extraction of the affected tooth or teeth affords relief for that part of the bone. This is even so when the process has become carious in the advanced stages. This leads us to believe that the pathological condition is centered around the tooth root and its attachment to the bone.

Smith has called our attention to the diagnostic points in differentiating pericemental abscess and pyorrhea.

Pericemental abscess is not the result of putrescent pulp tissue, but on the contrary, it generally occurs on live teeth between the bifurcation or at the end of fused roots. The pain is not severe but continuous. There are no inflammatory symptoms. The discharge of pus is small, oozing to the surface of the gum margin; it never

forms fistulae like a pulp abscess. On extraction these teeth present small globules of pus having no confining membrane.

The constitutional symptoms are very severe as compared with the severity of the pathological condition. Nervous oppression, indigestion, malaise or headache may result from the absorption of pus from these abscesses.

Smith claims that pericemental abscess is not a state of pyorrhea, although they are often associated in the same mouth. The abscess develops in some inaccessible depression between bicuspid or molars, while pyorrhea is found on straight rooted teeth. Smith further claims that teeth affected with abscess cannot be cured except by extraction.

The soreness, looseness and pus discharge from this class of teeth is often mistaken for pyorrhea, and consequently unsuccessfully treated.

#### ALVEOLAR PROCESS.

Tolbot in his well defined theory would have us believe that the alveolar process is of a different structure from the rest of the maxilla, and that it is a transitory structure whose only purpose is to mould itself about the teeth, and, when they are lost, to be absorbed. His experiments and arguments have been largely accepted by the dental profession. The author is of the opinion that the alveolar process is in no way different in its characteristics and structure from the rest of the bone, and that the socket is simply a medullary space, situated in an extension of the maxilla.

If the initial infection is not removed, the part follows the usual course of infection and inflammation. As this condition progresses, the tartar and infection continues to collect on the teeth and gums until it results in alveolar pyorrhea and we have pus pockets. Now in the event this infection is not removed, the bone begins to



liquify, constituting alveolar necrosis, and finally the teeth lose their attachment and become exfoliated.

In the true sense of the word *necrosis*, from a medical standpoint, cannot properly be applied to the molecular disintegration of the alveolus in pyorrhea. Certainly, we do not have any considerable bone dying in masses, thus the process is more of the character of *carious* bone. However, *necrosis* is in common usage among dentists in describing this condition.

#### TOOTH ROOT ABSORPTION.

Often on failure to restore a tooth by treatment, we extract it and find the end absorbed, leaving a rough margin with small sharp projections.

On Sept. 2, 1913, I wrote to Dr. J. B. Hartzell asking him to answer the following questions relative to the absorption at the end of the roots of teeth, especially with respect to the lower central and lateral incisors:

1st, Why is it that these teeth are more prone to root absorption than other teeth?

2d, How does it occur and leave the teeth alive?

3d, Is it the same process that occurs with the temporary teeth?

4th, Is there any way of diagnosing probable root absorption before it takes place?

In answer to these questions Dr. Hartzell wrote me as follows:

"The process of root absorption in teeth that have lost bony support is largely due to movement, which stimulates osteoclasia. My experience with those teeth is that the more rigid they are held in position, the less root absorption. Of course there is a certain amount of irritation from bacterial poison in all cases, which added to the physical movement, further stimulates bone destruction by making perfect the conditions for absorption.

"Did you ever see the two ends of a broken bone in which you had a false joint finally established? The ends

of such bones are rounded and resorbed back. This is the same thing which occurs in the socket about the end of a tooth that has movement, and also is the same process which destroys the root end.

"No, it is not the same process that occurs with the temporary teeth. That is a normal physical condition, and the process is stimulated in the case of temporary teeth through the irritation by the uplift of the permanent teeth against the deciduous root end, and happens long before any movement can occur in the tooth by reason of its shortened root and without infection.

"Yes, root absorption is always probable where there is considerable movement established or where infections are resident in the tissues around the root end."

Dr. Hartzell did not answer the second question, nor has anyone else, to my satisfaction. The answer to the fourth can be deducted from his remarks. Stop movement by treatment and splint.

#### FORMATION OF PUS AND POCKETS.

The result of irritation to the gingival tissues produces an exudate. This exudate becomes septic through the action of the bacteria of the mouth, forming pus; suppuration destroys the adjacent alveolus, forming the so called "pockets."

In the early stages, the extent or depth of a pocket on the tooth root is indicated by a reddish area. As the disease progresses and becomes chronic the color changes to a purplish hue. The color of the pus from the reddish area is yellow; that from the chronic or old standing is mixed with stagnant blood and is dark blue, purplish or black in color.

#### ALVEOLAR ABSCESS IN PYORRHEA.

A narrow constricted pocket may become suddenly very active or the exit from any pocket may become blocked to form a pyorrheal alveolar abscess. The

swelling may have some of the appearances of the ordinary alveolar abscess from a decomposed pulp, and is often mistaken for such.

Differential diagnosis between pulp alveolar and pyorrheal alveolar abscess:

## PULP ABSCESS.

Only on dead teeth  
Comes on gradually  
Severe throbbing pains  
Swelling extends over considerable area  
Color, bright red  
Location, near root ends

## PYORRHEAL ABSCESS.

Generally on live teeth  
Appears in a few hours  
Pain not so severe  
Swelling localized on one tooth  
Color, generally purple  
Location, near cervical border of gums.

Other points connected with the pathological anatomy are intimately associated with and described under the following pages.

## CHAPTER XXIV.

### SYMPTOMS, DURATION, DIAGNOSIS OF PYORRHEA.

#### SYMPTOMS.

As we said in the definition of pyorrhea, it is of slow onset. So slow is it that a patient may have it for years and be unaware of his condition until a dentist tells him of it. On the other hand, it is a sleeping volcano, liable to break out at any time. Suddenly, some day the gums begin to swell and the volcano breaks forth with an alveolar abscess. You will find that in the incipient stage the patient stops brushing his teeth because the gums are painful and bleed. In the latter stages you will find the exudation of pus, and the teeth becoming loose.

The symptoms are sometimes so mild that it is difficult to diagnose the condition until you have made a thorough examination. A physician once referred a case of pyorrhea to me and I reported that I did not think the case serious. I failed to make the proper examination. When I operated, I found the condition serious in that the alveolus was almost disintegrated.

To know the early signs of the disease one must be very familiar with them and always make a careful probing examination. The patient may have had pyorrhea before he got into the habit of brushing his teeth, so that when he comes to you his teeth may be in a clean condition, thus somewhat covering up the septic picture and deceiving the examiner.

A rather common symptom of advanced pyorrhea is a separation of the teeth, destroying the contact points and giving entrance for food impaction. The peculiarity of this separation is that the affected tooth bears away from the point of infection or pocket. At first glance it

would seem that the tooth would fall over on the weakened side. If we imagine the tooth to have rubber bands on both sides, each pulling the tooth in the opposite direction, should one be cut, we know that the tendency of the tooth would be to move toward the side where the rubber remained. Now the peridental membrane or ligamentous fibres are the elastic bands which draw the tooth away from the side where pyorrhea has weakened the "sling."

Mal-occlusion is almost a constant symptom and result of oral sepsis. It seems that the teeth are constantly changing their position in pyorrhea. One patient had a lower cuspid which had turned half way around. Another patient had such a wide separation between the two lower centrals that a bridge with two extra teeth was required to fill the gap. The result in such cases is to destroy the proper occlusion.

One of the most constant symptoms of pyorrhea is the odor coming from the pus, which is similar to that from a diseased antrum. You instantly detect this odor as soon as the patient opens his mouth, and you will soon learn to know it. The odor is characteristic.

The patients will nearly always tell you that they brush their teeth from two to six times per day, and that they cannot understand why their gums should give them any trouble.

The slight general symptoms are not nearly what we might expect from such an amount of infection; we are surprised to have some of the patients state that they suffer no other than local mouth symptoms. In other cases they have attacks of indigestion and have probably been treated by a stomach specialist.

The patient may exhibit the symptoms of various other diseases connected with the eye, throat, heart or kidney which may be traced to mouth infection from pyorrhea.

## DURATION.

The duration of pyorrhea is very uncertain. The incipient form, so called gingivitis, may run along many years before developing into the more severe types. When an infection of long standing does begin to make inroads into deeper structure, the progress of the disease is very rapid. There are many factors as to health, local mouth conditions and character of infection or inflammation which affect the duration.

Individuals who have healthy mouths and who ordinarily give proper regard to dental toilet may for some cause, such as sickness or severe grief, entirely omit any care of their mouths. This lowering of vital resistance together with the omission of cleaning the mouth will produce a pyorrheal condition giving a history of rapid development. In so short a time as thirty days such a case may exhibit bleeding gums, pus, and loosened teeth.

A recent case was that of a young, healthy girl of sixteen years who, inside of six months, developed such a severe pyorrhea that one tooth dropped out into the spittoon while making the examination. It would have been a safe guess to say that in six months more she would have lost many of her teeth. This case yielded promptly to treatment with the exception of lower central and lateral, which were bridged.

On the other hand, just the opposite history of duration is often met with. Patients often answer that they have had diseased gums from ten to twenty years.

From these observations it will be seen that there is no regular rule as to the time required for pyorrhea to run its course to the stage where there is exfoliation of the affected teeth. This much we do know; it never gets better spontaneously without treatment, but always, whether gradually or rapidly, is sure to continue to grow worse.

## DIAGNOSIS.

Dr. Younger has written that "fully ninety-five per cent of the Anglo-Saxon race have pyorrhea in some stage of development in one or more of the alveoli. It is common among all races in all countries, and among all classes. The rich and the poor, the well conditioned and the mean, the vegetarian and the meat eater, the bibulous and the abstemious, the fat and the lean, the robust and the debilitated, the strong and the weak are all affected. Neither does temperament seem to produce immunity, for the nervous, the sanguine, and the phlegmatic suffer from it."

I am sorry to say that even though the proportion is large many dentists who are accustomed to making diagnoses of carious conditions are not able to diagnose a pyorrhea case. Patients often complain that the dentist did not tell them that they had pyorrhea. Some dentists may at times recognize the condition but not attend to it. In other cases the disease has not received the proper treatment, meanwhile growing worse, and valuable time is lost before the patient is finally referred to a dentist or specialist who can cure pyorrhea.

The time is passing when a well informed dentist will limit his diagnosis of pyorrhea to what he sees in the mouth. Dr. Arthur H. Merritt wrote me recently that he believes "still more attention should be paid to the general health of patients, and very careful histories made, such as urinary analysis, blood counts, (including a differential), blood pressure, Wasserman test, when syphilis is suspected, radiographs, etc. Constipation seems to be associated with bad pyorrhea conditions and should be looked for and corrected."

Often grave responsibility is attached to our diagnosis. For instance, Anglii calls attention to cases of ulcerative gingivi-stomatitis due to Vincent's bacteria. These cases are said to have a close resemblance to diphtheria, while the mouth complication may be pyorrhea.

This infection is found between the teeth or in inaccessible places. The interproximal gum tissue and alveolus undergo a quick necrotic destruction. The diagnostic points are: the gray color which when rubbed off leaves a bleeding surface which will reproduce within two hours, much pain and loss of gum festoon. Positive diagnosis must be made by microscopical examination.

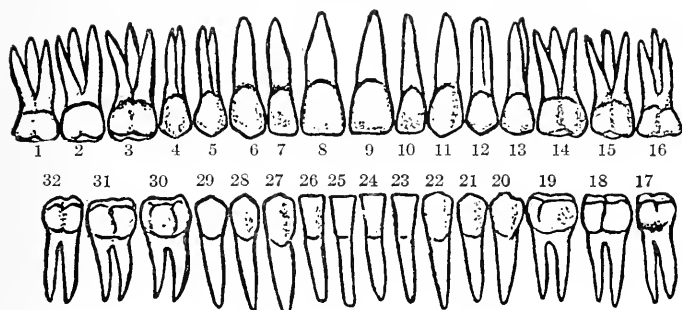
Some other conditions with which we should be familiar in making a diagnosis are syphilis, leucoplakia and tuberculosis. I will not go into a detailed description of these diseases; but just a point or two is given bearing on the diagnosis from pyorrhea. The initial lesion of syphilis produces a round oval nodule on lip or tongue which in color resembles that of boiled ham. The size may vary from that of a large pin head to a ten cent piece. They are always painless and indurated. In syphilis itself the alveolus may come away as a sequestrum because the circulation is cut off to such an extent that the pulp and surrounding structure may die. In diagnosis we must contrast this rapid destruction with the slow disintegration of the alveolus from the gingival border towards the apex which we find in pyorrhea.

Leucoplakia is a rare condition, but should be suspected if gums and cheeks present small, pale colored patches which are slightly indurated.

Tuberculous conditions are likewise of rare occurrence in the mouth. When present, we have small yellow granular nodules which are located mostly in the posterior part of the mouth and pharynx.

In making a diagnosis of pyorrhea, we must not only know the physical symptoms but go beyond the mere mouth conditions. As suggested by Dr. Merritt the general history of the patient must be taken into account when a diagnosis is given. By the routine use of a history chart many interesting and valuable facts for the diagnosis of pyorrheal conditions are brought out which will have a bearing on the treatment.





Name ..... Address ..... Date .....

EXAMINATION 1. No. of teeth involved..... 2. No. of teeth with deposits on enamel and no destruction of peridental fibres ..... 3. Teeth with pus discharge..... 4. Teeth loose with no pus discharge..... 5. Condition of teeth ..... mucous membrane....., bone..... character of deposits..... Occlusion..... Prothesis worn .....

HISTORY 6. Age..... 7. Duration..... 8. Beginning point of inflammation ..... 9. Most recent point of inflammation..... 10. Habits..... Tobacco ..... Alcohol ..... Oral Hygiene ..... 11. Parents' teeth .....

SYSTEMATIC CONDITION ..... Blood pressure ..... Urinalysis .....

Saliva ..... 12. Have you had any trouble with your digestion? .....

13. Have you had any pain in your abdomen?.....

14. Which did you notice first—trouble in mouth or stomach?.....

..... 15. Have you had any heart-burn?.....

16. Do you notice any excess of saliva after eating?.....

17. Have you any tendency to Diarrhea or Constipation?.....

Do you use laxatives?..... 18. Do you have Tonsilitis?.....

Rheumatism? ..... Gout? ..... Shortness of breath

or palpitation on exertion?..... 19. For what other

diseases have you been treated?.....

20. Are you under care of physician at present time?.....

PROGNOSIS 21. Good..... Fair..... Doubtful.....

Hopeless ..... To be extracted.....

22. Prothesis indicated .....

TREATMENT AND RESULTS.

FIG. 33.

## CHAPTER XXV.

### PROGNOSIS.

BLOOD PRESSURE.—ARTIFICIAL TEETH IN REGARD TO PYORRHEA.

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The question that patients ask the dentist when informed that they have pyorrhea are, "Can you cure it, Doctor? Will it stay cured? Do you guarantee a cure?"

To the last named question the dentist should always be prepared with an answer and, though he might gain a little more business by saying that he could guarantee a cure, still the time may come around when he will regret having told the patient this. One dissatisfied patient can do a dentist a great deal of harm. He should be told that to "guarantee" is only to make use of a catch phrase used by dental parlors and shyster physicians. Patients would not think of asking a physician to guarantee a cure of typhoid fever or grippe or ear trouble, before accepting his services. The patient with pyorrhea must understand that there are so many conditions on which our success depends that a cure cannot be guaranteed. Then again, we are not in the insurance business. Nature could not make teeth with a guarantee that they would stand, certainly we should not be expected to. The way to get out of all arguments of this question is the method I use in my office. On the examination sheet, I have printed at the bottom the information that "we do not guarantee any operations." The patient at once sees this and all questions along this line are generally avoided.

To the query, "Will it stay cured?" we can answer a little more definitely. If we have diagnosed the case properly, and have promised a cure, we can tell them with some degree of certainty that where the proper degree of oral hygiene is carried out, and where repeated

visits at stated intervals are made to the dentist, for the purpose of having the teeth cleaned and polished (systematic prophylaxis) that they should not only stay cured but that the condition of their mouths should improve with every visit to the dentist. In other words, if the operation is successful, and the patient masters the proper technique of keeping the teeth and gums in good condition, the mouth conditions should improve all the time.

The question as to the curability of pyorrhea is one which has been freely discussed by dentists, and on it has hinged much of the criticism of experts and specialists in pyorrhea. If you mean by "cure" that the bony structure will rebuild and will be restored to its normal bulk around the teeth; if you mean that the gums will grow back to their normal position at the juncture of the enamel and root of the teeth and with the same degree of firmness as heretofore; if you mean that the patients will be able to go as other people with just ordinary care of their mouths, then we would have to admit that a real case of pyorrhea alveolaris is never cured. Of course, in mild and incipient cases of pyorrhea, all this does not apply, but we are referring to the more advanced case. Remember, in giving your prognosis, that the patient expects the gum tissue to grow up to its original position at the juncture of the enamel and the dentine, therefore it should be explained that the gums will probably shrink from the teeth even more, for this is one result of a successful pyorrhea operation in that tumentation is reduced.

In answer to a question about the cure of alveolar pyorrhea Dr. Arthur E. Peck, of Minneapolis, writes:

"The burden of maintaining a cure after the treatment of pyorrhea rests largely with the dentist. You must impress upon your patients the necessity of having their teeth looked over at certain intervals, notifying them when they should call for a prophylactic treatment. This treatment is one of the most important steps in

maintaining a permanent cure of pyorrhea. If the first treatment for this disease has been thorough and the removal of absolutely every particle of the pyorrheal deposits has been accomplished the case is then cured. But in many cases the return of the disease can only be prevented by the assistance of the patients and at stipulated times a prophylactic treatment which requires as much or even more skill than to treat the case originally. The instrumentation must be thorough and every particle of the returning deposits removed. It requires the touch of the skilled operator to detect these slight deposits but this is essential to a permanent cure."

The question as to the curability of a given case is one which depends a good deal on the individual skill of the dentist. A case may be incurable in the hands of one practitioner and easily cured by another, who is more skillful in the removal of pyorrheal conditions.

By proper treatment, pyorrheal conditions can be healed, the tumefaction of the gums and soreness of the teeth can be made to disappear. The shedding of the teeth, flow of pus, elongation of the teeth, recession of the gums, carious action in the bone and its resulting odor can be obliterated. These are the benefits to be derived from the treatment of diseased gums. Not only this, but we can also prevent other teeth in the same mouth from becoming infected.

In regard to the curability of pyorrhea Hutchinson says:

"The great majority still believe it to be incurable, and progress is being seriously hampered by the influence of those who persistently refuse to believe what some of us know to be true . . . . The fact that the majority have failed in their efforts to cure pyorrhea has had greater weight than the successful effort of the few . . . . I have frequently been told by patients that some friend of theirs, at their solicitation, had intended to have treatment for pyorrhea, but had abandoned the idea because

the dentist had told them that it was a constitutional disease and could not be cured. No man has the right to deprive the patients of a benefit because he either cannot render the service or is ignorant of the fact that it can be rendered . . . . If any practitioner fails in his attempts, he must not conclude that a cure cannot be effected. If he fails, there is a good reason for it, and he may succeed later on."

The dental profession has been responsible for the loss of thousands of teeth just because so many dentists have told their patients that there is no cure for pyorrhea. If dentists have such large practices that they do not care to take time for the treatment of these cases, it is well for them to know that other men in the profession are making a success of this work and that from 75 to 85 per cent. of all cases of pyorrhea are being cured and stay cured under the care of these operations. I do not make this statement from mere hearsay nor from what other men have written. In addition to my own experience in treating these cases, I have been in the offices of other specialists and have seen numbers of patients who have been cured. This will be discussed again at full length; but let no dentist be again guilty of saying that pyorrhea operations are failures, for it is up to us and up to the dental profession to stop this horrible increase of oral sepsis.

In giving our prognosis to the patient, we should bear in mind that the disease in the upper jaw is more amenable to treatment than in the lower. In the first place the structure of the teeth and jaw favor this and they are more easily operated on in the immovable upper jaw. In addition to this, they are not subjected to the movement of the muscles and are not constantly immersed in the re-infecting saliva. On the other hand, the prognosis should be much more guarded if the disease has taken hold of the lower jaw. Here all the secretions are constantly coming into the pocket that

we are trying to heal, and it is difficult to keep the medications that we apply in place for any length of time so as to get their full effect.

If the patient can be operated on before any destruction of the supporting tissues, so much the better, but in those cases where this has occurred to any considerable extent, even though an operative procedure might for the time being tighten these teeth, it would be better to extract them at once.

On the question of bony support, Smith says:

“The permanent tightening of teeth which have been loosened from pyorrhea, is wholly dependent on the amount of support remaining in the alveolus and the life of the cementum.

“If the destruction of the pericementum caused by the necrotic wasting of the alveolus has not progressed too far, the tissues about the loosening teeth may, by intelligent treatment, be made to close in upon the roots and thus to a greater or less degree, they will tighten in their sockets.

“Terminal alveolar tissue once necrosed and wasted can never be restored, this tissue cannot be made to renew or build itself, neither can it be made to build around the roots of the teeth, therefore, the cure of pyorrhea is not necessarily followed by permanent and satisfactory tightening of all the teeth under all conditions.”

Another point in giving the patient a prognosis will be the probable condition of vitality of the peridental membrane. If the disease is in such an advanced stage that this structure has become saturated with infection, or its nutrition is to any degree affected, the chances of our being able to make a complete cure are correspondingly lessened.

In case the teeth are loose, be guarded against prognosis. In other words, you cannot always give a correct prognosis in such a case. If the tooth can be moved from side to side, it is not so bad, but if it has that

“squashy” sound and you can move it up and down in its socket, the tooth might as well be extracted. The ends of these “squashy” teeth often look as if a rat had gnawed them. This process is described by Dr. Hartzell in the chapter on “pathology.”

When we find the tooth which can be raised up and down in its socket we are led to believe that there is little life in the membrane surrounding the tooth, and that the terminal end is covered with spicules and burr-like projections. When such teeth are extracted, their ends resemble a log on which barnacles have collected. Other conditions might produce this loosening of the ligamentous attachment, as when the tissues at the apex of the socket have become so infected that the ends of the root undergo a process of absorption similar to the absorption of the temporary tooth. If either one of these conditions can be diagnosed beforehand, we can say with absolute certainty that the tooth cannot be saved.

#### BLOOD PRESSURE.

Clinical medicine now demands that the blood pressure test be used in examinations to indicate renal or heart troubles. It is required in examinations for life insurance, army and police departments.

Only lately have dentists begun to realize the importance in regard to the diagnosis, prognosis and treatment of pyorrhea.

Blood pressure readings are useful to dentists because it gives information about arteriosclerosis, chronic nephritis, uremia and plumbism. In these we find the pressure high while in the following named diseases we read a low pressure: anemia, diabetes, starvation and exhaustion.

The average pressure of males should be 120, at the age of 20. For each two years above, one millimeter should be added. Thus at the age of 30 the reading

should be 125. In women we find all readings about 10 millimeters less.

Simple inexpensive instruments are now on the market and have proved their value in pyorrhea work.

#### ARTIFICIAL TEETH IN REGARD TO PYORRHEA.

Every dentist who treats pyorrhea is frequently met with the argument that "it is just as good to have a set of artificial teeth and much less trouble than trying to save these I have." Such a patient will often bring along a friend who has a "perfect set of artificial teeth," and inasmuch as this friend may appear quite healthy, it will often take the best argument at our command to convince our patient that the restoration and preservation of the natural teeth is superior to any artificial substitutes. In the first place we will have to admit that artificial teeth are better than teeth and gums which are diseased and which are not being kept clean. But on the other hand, they must consider the mortification that they will feel when the teeth are extracted, the inconvenience of getting used to the artificial teeth and the danger of frequent breakage, and of having to stay indoors for days at a time while the teeth are in a vulcanizer for repairs. But greater than any other consideration is the fact that the biting force of artificial teeth is only about one fourth of that of natural teeth and we know that proper mastication of the food is of the greatest importance in maintaining good health.



## CHAPTER XXVI.

### INSTRUMENTS FOR USE IN PROPHYLAXIS AND PYORRRHEA WORK.

Dr. Riggs, of Hartford, is generally credited with being the first American to use instruments in the treatment of pyorrhea. The instruments he used were very large and crude. Some of his original shapes are still to be found in the supply houses.

Considerable evolution has taken place in reference to size and shape. From a very few we are now offered sets of instruments numbering several hundred.

Beginners should not be discouraged by the fact that pyorrhea specialists, though possessing large sets of instruments, often wish they had a still greater variety of shapes and forms. It is not advisable for the beginner to buy all instruments in any one set; he should select a small number and add to them as needed and as familiarity with the work demands. The success of pyorrhea operations does not depend so much on the particular style of the instruments as on the operator's familiarity and dexterity in their use. This is proved by the fact that many of the contributors to this book work with instruments made on different principles.

The dentist in beginning this work should select those instruments which he thinks will fit into the pockets he has seen and should not attempt to use the complicated instruments with crooks and turns, the purpose of which it takes experience to appreciate.

In making a selection of instruments we should bear in mind the delicate work required. In addition to being sharp and delicate the blade must be extra strong. Probably more is required from a pyorrhea scaler than any other surgical instrument.

Younger says, "If but one small speck is left, even

though it could be framed in the point of a pin, the irritation and bacterial infection maintained by its presence would, I think, prevent the diseased surface from healing. It is in the detection and removal of these minute points that skill and delicacy of touch are so much required."

So difficult is the operation, and in order to become efficient and expert Dr. Hartzell said that on his infirmary patients he frequently scaled a tooth and pulled it out to see what had been done. Often he found tartar which had escaped his instruments.

Probably the best general class of instruments for this work will be those which are used with a push and those used with a pull motion.

The Allport and Kirk patterns are examples of the push motion while those of Tompkins and Hartzell represent pull motion. The Younger type has a point that can be used either push or pull motion. The file type was popularized by Smith. Nearly all complete sets now have some instruments with file points. The users of each variety of instruments makes the claim of greatest efficiency and a minimum amount of pain to the patient in their use.

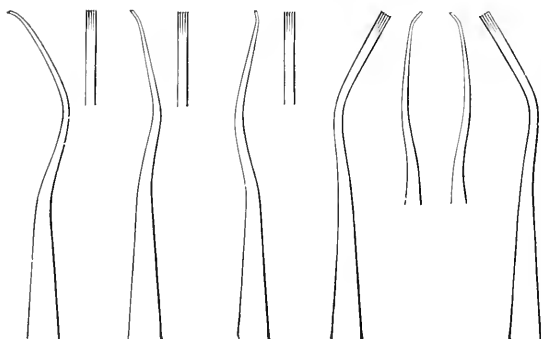


FIG. 34. THE KIRK DENTAL SCALERS.

The dentate edge prevents lateral slipping. After their use smooth-edged instruments should be used to make the surface smooth.

The Kirk dental scalers are excellent for removing the large deposits of salivary tartar. The claims for their use are a minimum amount of lateral slipping and wounding of the gums. They are not intended for deep pyorrheal conditions; but for dense masses of deposit. The wedge-shaped points on each blade cause the mass to break into small fragments which are thus loosened from their attachment. When used they must be followed by a smooth-edge instrument to remove the smaller particles and to smooth the surface.

At the time when the push motion instruments were popular Dr. R. B. Adair revised the Allport type of blade and added others. This was the first set having the end of the blades concave on the cutting side to better adapt them to the contour of the root, while the back was rounded to prevent unnecessary irritation or wounding of gum tissue.

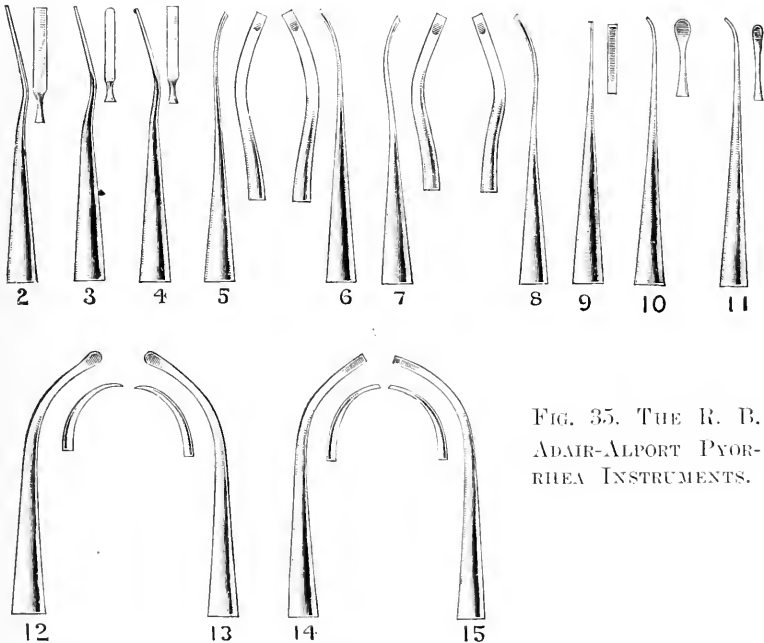


FIG. 35. THE R. B. ADAIR-ALPORT PYORRHEA INSTRUMENTS.

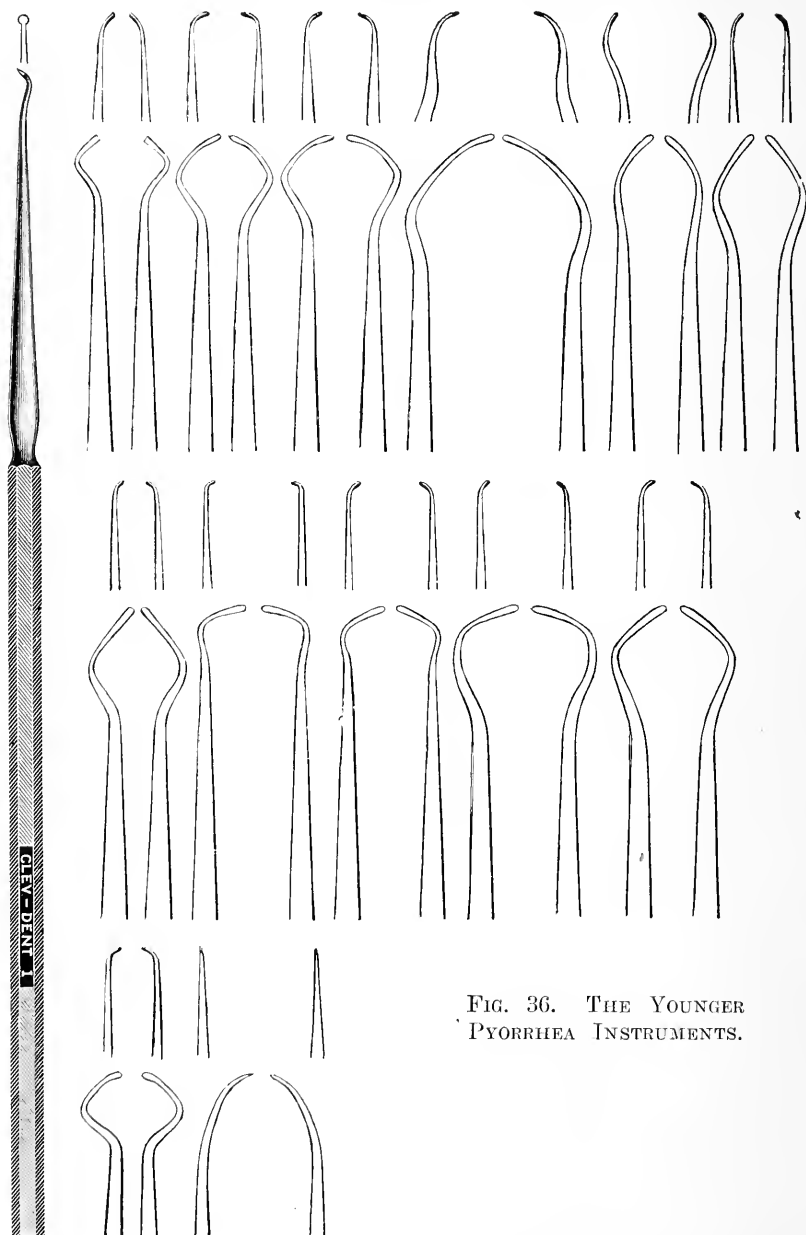


FIG. 36. THE YOUNGER  
PYORRHEA INSTRUMENTS.

The curved plane head was patented by Dr. Geo. Winkler. Dr. Gartrell, of Washington, introduced points with blades to work on the Japanese plane principal. Dr. C. W. Jones, of St. Paul, suggested having the points centered with the long axis of the handle. Also a method of sharpening the blades to prevent deep cutting. Dr. Carr took these ideas and classified the instruments into a set. Dr. T. B. Hartzell has modified some points and by adding others has produced a most efficient collection.

This set is probably too expensive for the general practitioner but for those who desire to specialize in this line of work it is certainly a good investment.

The W. J. Younger pyorrhea instruments receive a well merited large sale. They have been condensed and modified by Dr. Robt. Good, of Chicago, into

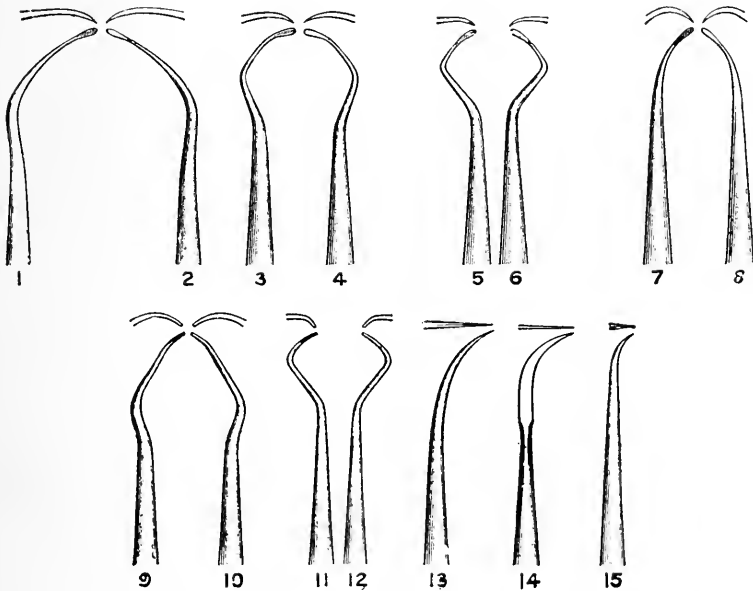


FIG. 37. THE GOOD REVISION OF THE YOUNGER PYORRHEA INSTRUMENT. CLEVE-DENT.

a new set which is in the writer's opinion indispensable to any dentist who even "cleans teeth." Dr. Good says:

"These instruments are made thin, so they will pass under the gums easily, and I always use them with the 'pull' motion, never shoving, because the 'shove' motion will cause pain. The entire point is a cutting edge, so that it makes no difference at what angle the instrument is held, it will cut."

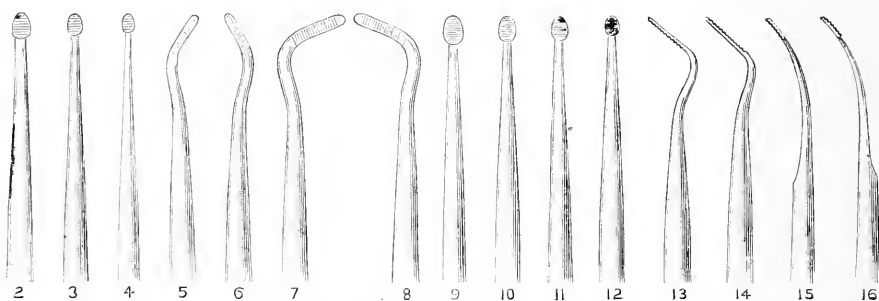


FIG. 38. SMITH'S PROPHYLAXIS INSTRUMENTS. IVORY.

The Smith prophylaxis instruments, and the various modifications by other dentists and manufacturers are used to remove deposits from the roots and necks of the teeth. The smaller oval forms are for opening into the diseased pockets. The large blades are for the interdental spaces. The writer has the blade of No. 13 of this set made three times longer and finds it most excellent to reach deep pockets on the posterior root surface of molars. The files are used to finish with after using other scalers.

The M. H. Fletcher set of bone curettes and alveolitis burs, are fully described in another chapter by the inventor. These instruments are for cutting away dead and diseased bone about and beyond the roots of the teeth and are not styled nor intended for removing calcarious deposits.

The instruments above described are the ones most

generally used. There are many others just as efficient for good work but nearly all of them are modifications of these standard types.

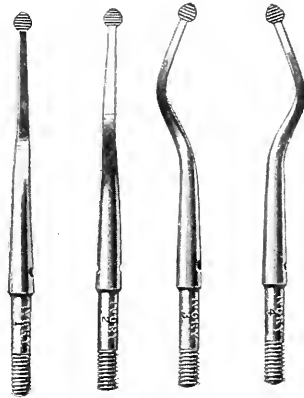


FIG. 39. TOMPKINS' PYORRHEA FILES.

As many of the points are made in pairs, or right and left, it is advisable, where possible, to buy for cone socket handles.

The writer prefers a double end, octogen-shaped, hard rubber handle. These save handling so many instruments. They can be boiled. The shape and size is just right to prevent cramping. Younger and Good use the various colored sealing wax knobs on their handles for this purpose, while Sarrazin has aluminum knobs with set screws, to use on small handles for the purpose of preventing slipping and cramping of the hand from long use.

## CHAPTER XXVII.

### TREATMENT AND INSTRUMENTATION

THE YOUNGER METHOD.—STRONG DRUGS USED AND OBJECTIONS TO THEIR USE.—THE JOSEPH HEAD METHOD

If there is one general criticism that can be made against the dental profession it is in regard to the general method of dealing with patients presenting themselves with cases of pyorrhea. It has been the experience of all of us who have treated a considerable number of such cases to see patients with merely a condition of slight irritation of the gum margins who had been informed by some dentists that their case was incurable. We find that dentists, as a general rule, do not like to treat these cases, preferring to throw them off with the simple statement that the case is incurable. This certainly lessens the respect of the patients for the dental profession, but of much greater importance is the fact that it means the loss of many teeth which should have been saved; the patient, believing absolutely in the integrity of the dentist, has gone on and on without seeking other aid.

If a splinter should stick in the finger the tissue soon turns red and suppuration takes place. Now, exactly the same thing takes place in the mouth. If a dentist should stick a splinter in his hand, he probably would not inject any of the strong pyorrhea remedies. Rather he would remove the cause. The same thing is true in pyorrhea. The pathology of the tissue surrounding the splinter is the same as that which makes the red tinge on the gums and the final suppuration. The pathological picture is simple and plain; Dr. Tolbot goes so far as to say that the dentist, allowing a patient affected with disease to go out of his office without telling him of his



condition, is guilty of mal-practice. Incipient pyorrhea is easily cured. Just as removing the splinter cures the finger, so incipient pyorrhea will get well in a few days if the teeth are cleansed and the tartar removed from under the gum margin.

Every dentist should know the facts, now so well established regarding the beginning of this disease; no matter what the condition, a great deal can be accomplished by treatment that is simple and easy, giving the patient great relief and saving teeth for future service.

Of course, it must be realized that hard work will often not be paid for at the fees we are accustomed to receive for other work; but if we do our duty towards this end, we will soon become more expert and in time our success will enable us to receive reasonable compensation.

Dr. D. D. Smith says: "Pyorrhea alveolaris is by no means a subject to be treated in a hit or miss haphazard manner; it is a foe worthy of the steel of a valiant aggressor and consequently requires careful consideration, a steady hand, a keen sense of touch, and sound judgment."

Dr. M. M. Bettman, of Portland, Oregon, says: "The main point in the treatment of pyorrhea is the thorough scaling and polishing of the roots and the correction of any malocclusion which may exist, no matter how slight."

Dr. R. G. Hutchinson, Jr., says:

"The time will never come when every dentist can successfully treat pyorrhea. It is unreasonable to expect that what requires special training can be accomplished by one who only occasionally engages in such practice. It is also unreasonable to believe that because the operation cannot be accomplished by the majority it is impossible."

The Younger method, as carried out by Good and others of this school, consists of first thoroughly remov-

ing all concretions and carious bone, then injecting pure warm lactic acid into these cleansed pockets, with care that it does not run over the external gum margin. This is effected by the use of a small caliber, round pointed steel needle on a hypodermic syringe. The particular one as used by Good, can be procured from Sharp & Smith, of Chicago.

This treatment is repeated three or four times at intervals of several days and only a few teeth are treated at a sitting. The object of this treatment, as claimed by these operators, is, that the acid produces somewhat of a solvent effect upon whatever concretions have remained and also upon the carious bone. In addition to this, it has a somewhat stimulating effect on the granulation tissue which surrounds the tooth roots and a new attachment is formed.

While it is undoubtedly true that this treatment has produced good results it is just as true that their method cannot be said to be without objection. I believe the success that they obtain can be attributed more to the thorough cleansing of the pocket than to the injection of this acid.

I am led to believe that the same result could be obtained by the injection of almost any other strong drug such, for instance, as Tartar Solvent which, it is said, does not have the disadvantage of dissolving the tooth root. If you will place a tooth root in pure lactic acid and allow it to remain for twenty-four hours, it becomes changed into a jelly-like mass. This is prevented in the mouth by the fact that the injection remains only a minute before it is washed out by the surrounding liquids, but there is the possibility that some of it may be retained in a remote cavity.

One of the most perplexing cases that I have had to diagnose was that of an army officer who had been treated by the lactic acid method. He had received great benefit from the treatment, but from time to time he

suffered excruciating pain on the side which had been treated. Several examinations, at intervals, were made in an endeavor to diagnose the cause of this trouble, but without success until an X-Ray was made that showed a cavity in the upper cuspid root about the middle third. The instrument was inserted through the old pocket opening and, when high enough, fell into this cavity. The patient almost leaped out of the chair with pain. There was nothing that could be done except to extract the tooth. It was found that the constant application of this acid had dissolved the tooth with the final result of exposure of the pulp. There was no sign of decay except such as acid produces on tooth substance. While this is probably a rare termination of the treatment, at the same time, it is well to call attention to the possibility of this complication occurring in deep pockets. Another objection to the filling of these pockets with this or any other strong drug, is the great amount of pain which sometimes accompanies such treatment. It is well, if possible, to secure some degree of anesthesia of these sensitive teeth before subjecting them to the pain of this treatment.

Another drug used by many is trichloroacetic acid. After thorough instrumentation, sections of the gum are dried with cotton rolls or napkins and the pockets are saturated with a ten per cent. solution of trichloroacetic acid, using small ropes of cotton, or wood tooth picks. This treatment is repeated in three or four days but should not be used more than three applications.

After the operation of curetting out these pockets, if suppuration continues, Dr. Kelsey recommends the use of phenol-sulphonic acid to be applied with a small pointed wood applicator.

Deliquesced chloride of zinc, very slightly diluted, applied on small wood applicators into pockets, has some advocates.

Fieler, of the Royal University of Breslau, modifies

the Younger treatment as follows: "After scraping away deposits, the teeth, including their necks, are polished and when they have been dried we introduce iodine or lactic acid and iodine tincture because the former is borne badly on account of its nasty taste, and also because in some cases it produces severe pain. I introduce both medicants into the pockets on Japanese bibulous paper wound around nerve needle. Often from two to four medical after-treatments suffice, carried out once or twice a week."

The result obtained by the use of these drugs is the cicatrization of the tissue.

Several years ago, Dr. Joseph Head, of Philadelphia, gave a most sensational report claiming that bifluoride of ammonia has a most peculiar action of dissolving tartar from the teeth without harming the tooth structure. As teeth and tartar are the same chemically, this seemed most remarkable. This preparation has a place in the treatment of pyorrhea and we quote at length from his own description of this method. One precaution that must be observed is to secure a suitable syringe, preferably the celluloid syringe. This holds a small quantity and will deliver drop by drop. Dr. Head thus describes his method:

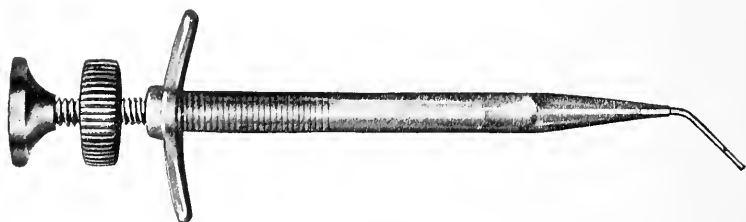


FIG. 40. CELLULOID SYRINGE WITH PLATINUM POINT.

No flooding of the mouth. One or two drops at the bottom of the pocket.

"Through an extensive series of experiments it was proven that a twenty to twenty-three per cent. solution

of bifluoride of ammonia (an acid salt of hydrofluoric acid) will disintegrate the tartar on a tooth as readily as hydrofluoric acid itself and also leave the tooth apparently unsoftened. Later experiments have shown that this solution can also be applied to the gums with the most beneficial effects, as it seemingly stimulates the tissues and diseased bone to such healthy action that deep pockets around loose teeth speedily fill up with healthy firm tissue and the sensitive teeth are reunited to the gums, becoming secure and useful agents in the process of mastication. After one or two injections, the soreness will largely disappear and all the tartar scale that could not be so easily and painlessly removed at the first two sittings tends to be so loosened that its thorough removal by the scalers is easy for both patient and dentist. After four or five applications, one week apart, black scales that have escaped the scaler will sometimes be found floating loose in the pocket so that they can be readily picked out and the root will be as smooth as velvet to the touch of the instrument.

“In closing, perhaps, it would be well to tersely run over the steps of my treatment of pyorrhea. Take off all tartar that can easily be removed and cleanse the mouth as thoroughly as can be painlessly accomplished, at the same time instructing the patient in the use of brush, floss silk and mouth wash, pointing out particularly where he fails to reach the bacterial plaques, and demonstrating what motions of the brush are necessary to remove the plaques. The syringe should then be filled with bifluoride of ammonia and the platinum point inserted near to the bottom of the pocket or pockets, which should be filled full from the bottom to the top. During the operation of injecting the pockets, the cheek and tongue may be guarded with napkins with which all excess or overflow should be wiped away. Then the patient should be allowed to spit for a minute or two when the mouth may be slightly rinsed with water to

remove any excess of acid. Less irritation to the mucous membrane occurs from this method than that formerly advocated, which consisted in allowing the solution to rest in the pocket for a minute or two minutes. The patient is then dismissed with the instruction to return in a week. He is also cautioned to carefully observe all directions on home prophylaxis. When he returns next week the teeth are again scaled as far as feasible, cleaning them thoroughly with brush and pumice and a coating of tincture of iodine. When this is finished another application of the bifluoride is made as before. The procedure for the third sitting is as for the second, but usually after that the teeth are free from tartar, the pockets have started to heal and the treatments need be for a period of only about fifteen minutes, just long enough for the application of the bifluoride and the little cleaning and scaling required. The bifluoride should not be applied oftener than twice a week and usually once a week is more desirable. Of course loose teeth should be tied to their secure neighbors whenever feasible."

## CHAPTER XXVIII.

### THE AUTHOR'S METHOD AND SYSTEM OF TREATING PYORRHEA.

For the first time the author is afforded the proper opportunity of giving in full detail each step in a systematized method of treatment which has for many years proved highly efficient in his practice.

While many papers have been read and published and clinics given, only parts of his work could be presented. For this reason many of these contributions were not thoroughly understood nor were the methods generally adopted; but the author has the satisfaction of knowing that some dentists who have visited his office and seen his methods in practice have adopted them successfully.

The author's treatment having proved so successful in his own hands, it is herewith given in full detail with the hope that it may prove equally useful to others.

The instruments which the author uses consist of the following: R. B. Adair revision of the Alport; the Smith set of files with the author's modification; Good's revision of the Younger; the Fletcher, and the Hartzell sets. As the manner of using the above sets are fully described elsewhere, this part of the work is omitted from this chapter. The author believes that proper instrumentation is the only solution for the cure of pyorrhea. He does not claim that the above mentioned instruments are superior to all others, or that they are entirely adequate for every requirement.

In the description of this treatment we will consider that we have a case of pyorrhea where the teeth are loose, the gums swollen, and the pockets are of medium depth containing some cheesy disintegrated alveolus, in other words, a typical case of pyorrhea.

Several days before the surgical work the patient is given several sittings, at which time the mouth is sprayed out with some antiseptic solution or AA Dental Mouth Wash. Each time the mouth is mopped out with a "Kuoris," the cotton having been dipped in a weak solution of hydrogen peroxide and then applied to the gum surfaces. A coating of Skinner's Disclosing Solution (formula given elsewhere) is next applied; other good antiseptic solutions for this preliminary treatment are:

DR. MEDALIA'S MILD ANTISEPTIC SOLUTION		DR. BUCKLEY'S PYORRHEA ASTRINGENT	
Compound solution of iodine (U. S. P.)		Potassium iodide	
Glycerine	aa grs. s s	Zinc phenol sulphonate	aa grs. 60
Distilled water	grs II	Iodine	grs. 80
		Water	m 192
		Glycerine	grs. 100

Any one of these three preparations is good. They are applied on gums with a cotton pledget wound round a toothpick or with a camel hair brush.

This preliminary treatment has the advantage of getting acquainted with the patients, gaining their confidence, and getting rid of any bad odor. By staining the debris around the tooth it is more easily removed.

On the hour of appointment for the operation the room and instruments are prepared just as for any other surgical operation. All the instruments needed for the operation are thoroughly cleaned and sterilized, the instrument table is wiped off with alcohol and a sterile napkin is placed on the table, upon which are laid all of the instruments.

The point of beginning the operation having been selected—generally the right side of the upper teeth—this section of the gums is dried off with cotton or bibulous paper and either a solution of 5 per cent cocain is applied or, better still, a fresh solution of cocain and adrenalin as prepared by the Park-Davis Company. Also, of late,



a preparation called "Peritundo," put up by the J. W. Edwards Co., of San Francisco, has been used with excellent results. This preparation contains eucain and adrenalin. You make your solution fresh for each case. The anesthesia obtained from this preparation is fine and it gives the minimum amount of hemorrhage. The anesthetic is inserted into the pocket with a clean hypodermic syringe, using for the purpose a long steel point. Do not use a sharp needle.

The Sharp and Smith needle is most useful, the point is small and not expensive and better than anything I have found or had suggested to me for general use.

Five or six teeth having been anesthetized, we are now ready for the surgical work. Great care must be exercised that the gingival margin be not injured for at this border there seems to be a fibre which acts like the draw strings on a tobacco sack and when once severed, it is never reunited. It is a good plan to pack small shreds of cotton saturated with the anesthetic into the spaces between the teeth, keeping the portion free from saliva for a few moments until complete anesthesia is obtained. Generally the beginning of pyorrhea at the gingival border is more painful than the deep pockets so this method is most important to use.

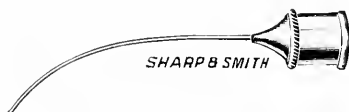


FIG. 41. A SMALL, INEXPENSIVE STEEL POINT ESSENTIAL IN PYORRHEA WORK.

We endeavor to use the instruments so as to give the minimum amount of pain. However, it sometimes happens that the very case in which we expect the least pain, is the most sensitive. The patient's fears are allayed when they see the operator is taking steps to prevent pain.

In a systematic way begin at the gingival opening of pocket and gradually proceed towards the apex of the tooth until the sense of touch tells us that the instrument has removed all deposit and dead membrane and reached the extreme depth of the pocket.

While each instrument is in the hands of the operator, he should operate on just as much surface of the tooth or teeth as possible, that is, he should go as far as he can before another instrument is taken up.

When through with an instrument or before placing it in a new location or pocket it is dipped in a glass having an inch of its depth filled with smallest size shot covered with antiseptic solution. By dipping instruments into this glass we not only disinfect the point but the shot effectually cleans the edge from any adhering matter or blood clot.

Each selected section is taken up and finished before scaling other teeth. A section as spoken of means from three to four teeth.

The "root planing" having been completed, I take the proper Smith's files and smooth off all roughness which may remain or possible grooves cut in the teeth. With Adair's small bone curette the disintegrated bone and sharp edges of the alveolus are most carefully removed, its point, having a rounded end, will not remove sound tissue. Any carious bone or sharp corners of alveolus would retard the healing of tissue over it. A delicate sense of touch and experience is imperative in using a curette in pyorrhea work.

One of the greatest aids for thorough work is the use of a good compressed air syringe, such as that made by the A. C. Clark Co. However any of the syringes applied with switch-boards would answer. This one is the least in the way.

A stream of warm compressed air at from twenty-five to forty pounds is directed into the pocket and if the latter contains any foreign material, calculus or serumal

tartar, it can generally be seen. This syringe can be handled by the operator but it saves time to have the assistant trained to do it.



FIG. 42. THE CLARK AIR SYRINGE, WHICH THE AUTHOR FINDS THE BEST FOR HIS WORK.

In working on the lower jaw, it is advisable to have the saliva ejector in place, using the compressed air syringe in the manner above described. The air distends the gum from the tooth so that with the mirror, the operator can see and remove the smaller deposits which, when dry, show up so much better than when in a moist condition.

When cleaning teeth or removing tartar, place the electric mouth light on one side of the alveolus opposite the root of tooth to be cleaned; you will be able to locate the tartar on the opposite side and by reversing the light from side to side, enables the operator to find tartar deposits even if they extend almost to the apex of the roots.

Having satisfied myself that the teeth are surgically clean and that the disintegrated bone and sharp edges of the alveolus are rounded off so that the soft tissue or gum can festoon itself over the surface without any irritation from projecting bone, the entire surface operated upon is then washed out with a liberal supply of warm water, normal salt solution, or, better still, an antiseptic solution such as AA Dental Mouth Wash. This solution is placed in a spray bottle, having for a point the Good needle which we advised for use in the hypodermic syringe. Plenty of solution should be used; a full spray bottle is not too much for each tooth.

Another apparatus which I use with good results is

that used by Dr. Conrad Deichmiller, of Los Angeles, consisting of a Valentine irrigator placed near the ceiling and a common bulb syringe inserted at the end of tube to get a greater pressure. This is not only a useful apparatus for the treatment of pyorrhea, but in other dental surgery as well, such as washing out the antrum, abscesses, etc. A quart of hot normal salt solution should be used in this apparatus. (Normal salt solution is made by adding one dram of salt to a pint of sterile water.)

The entire area of the diseased gums is thus systematically gone over in turn. Whatever success the author has had in the work, he believes it is due to the thoroughness with which the surgical technique is carried out. If any scale of deposit, any carious bone, or a sharp edge is left, that particular place will not heal, and if it shows up before the patient is dismissed the pocket is again opened up and this irritant removed.

Thorough irrigation with plain warm water or normal salt solution is used for no other purpose than that it will wash out the debris. We do not use any solution which would tend to destroy or prevent organization of the clot. It would be preferable not to wash out the pockets after instrumentation were it not for the fact that loosened scales of deposit might remain to become reattached and give future trouble. If nothing stronger than the solution named be used for irrigation, we find that we have as good blood clot as though the thorough washing had not been done.

It matters little whether all the teeth are completed at one sitting or not, as the field operated upon is sealed from infection from the other parts of the mouth. Whatever section is operated upon, must be finished at this time; if this is not done, when the patient returns in a day or two for another hour of surgical work, we will probably have forgotten just where we left off or whether or not we have finished certain teeth.

In our operative procedure, we will find fillings which have a shelf overhanging the entrance to a pyorrhea pocket and the operator is prone to leave this for future consideration. However, as we have given this as a causative factor, it should be eliminated almost as soon as found. Sometimes the quicker way to do this is to remove the filling and put in some temporary stopping, waiting until we have finished the operation and can knuckle the filling up in the proper manner without any overhanging edges; ill fitting crowns and bridges should also be promptly removed.

Sometimes the deposit of tartar is so hard that it is good practice to remove it with a burr, placed in the dental engine. It is well to first allow the burr to revolve against a stone so as to modify its cutting qualities in order that it will not gash into the tooth root itself. The burs with long shanks and small heads, as described by Dr. Fletcher, can be used to advantage in removing carious bone or cleaning out between the roots of the teeth when it is not practicable to obtain sufficient force or effectiveness with a hand instrument.

I expect the same healing that I would from any fresh wound which is filled with a blood clot. I do not mutilate the gum at the cervical border. I endeavor to have the operation practically painless and without any great strain on the patient. While our object has been to produce a clean wound sometimes after treating for a few days, we will find a trace of pus which shows that something has been left in the pocket which must be removed. In such an instance it will be necessary to again open up the pocket or to inject some medicant to overcome the infection which has spread into the body of the alveolus.

## CHAPTER XXIX.

### THE AUTHOR'S METHOD AND SYSTEM OF TREATING PYORRHEA—CONTINUED.

THE MEDICAL TREATMENT.—PRACTICAL HINTS FOR APPLICATION.—AN UNEXPLAINED CHEMICAL FORMATION  
USEFUL IN TREATMENT

Many cases would undoubtedly get well with the surgical procedure alone, but no medical treatment known will aid these cases unless this surgical procedure has been well done. However, in the same patient, with the same degree of operation on both sides of the jaw, I have tried the experiment of using my medical dressing preparation on one side only. For the first few days the side not dressed showed inflammation, the teeth were elongated, and it was very sore to touch, while the opposite side where the preparation was used showed no such symptoms. The reason for this is logical. A surgeon who had performed an operation, follows it by applying a dressing which has a great deal to do with the proper healing of the wound. For years the dental profession tried and experimented in an effort to get some method of covering the operated surface in pyorrhea work. Some have tried sponge grafting; some, tying strips of rubber dam about the teeth; still others, packing the pocket with strong irritating drugs. The difficulty that we have hitherto had was that the treatment or medicament could not be kept in place. It was immediately washed off by the constantly flowing saliva. The failure to use a suitable protection left the field of operation a veritable culture tube—the mouth containing stagnant saliva, decayed teeth, and many different kinds of bacteria. Hitherto, the antiseptics we have used have proved failures, for, if strong enough to destroy the

bacteria, they destroyed the membrane of the mouth or kept it in a raw state.

Some years ago, Dr. R. B. Adair, made a solution of iodine, creosote, tannin, chlorate of potash and glycerine. He was most successful with this treatment, but the combination was difficult to make and it was not stable. He gave the formula to the profession but few men had done anything with it. It was hardly possible to get a prescription for this preparation filled properly as the consistency more than the quantity was the requisite. In attempting to get it filled at drug stores, I found difficulty in getting it just right. I improved this formula and in order to supply the prescription to those dentists who had shown an interest in it and wished to give it a trial I had the preparation placed upon the market under the trade name of "AA Pyorrhea Treatment Nos. 1 and 2."

This preparation was shown for the first time last year (1913) at the National Dental Association at Washington. I not only wished to give the profession the opportunity of using this "dressing" that had filled a long felt want in my practice, but also to stimulate others to investigate the nature of this preparation. I certainly do not know and no one has been able to find out, although some of the most prominent men in the profession have successfully used it for sometime. The name *treatment* is a misnomer; it should be *dressing*, as it can be used in combination with any treatment.

METHOD OF MAKING NOS. 1 AND 2 PYORRHEA DRESSING.—  
ORIGINAL FORMULAE BY DR. R. B. ADAIR.

Take one oz. chemically pure iodine crystals. Pour over this just enough chemically pure beachwood creosote to cover crystals of iodine. Let stand for 48 hours, then stir thoroughly with a glass or wood rod, making a thick mixture. When this is settled, pour off from sediment at bottom. This liquid is the No. 1 preparation.

Procure large mouth bottle of about 3 oz. capacity such as vaseline comes in. Pack into such a bottle tannic acid crystals. Use a wood rod and pack tight, having one-half inch space at the top of bottle. Into this space pour Glycerine C. P.—about one-half oz. Let stand for several days. If on examination the glycerine seems to have reached the bottom, place it on a water bath and leave until the whole has become a thick syrup. If glycerine has not reached the bottom, add a small quantity of glycerine. After heating on water bath, mixture should stand and age for about a week. The mixture will become clear and will have the consistency of thick molasses. This is the No. 2 preparation.

These preparations are rather hard to make in small quantities. They must be just the proper consistency which is best obtained by aging. The preparation as manufactured stands several months before bottling.

Simple cases will need only three or four applications; the severity of the condition and the extent of the operation determine the number of applications necessary. This “dressing” does not stain a clean tooth—really bleaches it—but it does stain every bit of foreign matter on the tooth root. I have found it a good idea to use a few applications before the operation as a substitute for a disclosing solution, as this staining will show up the tartar and other accumulations. It softens and loosens the attachment of accumulations. This “dressing” which we use comes nearer filling all requirements than anything yet found. It furnishes the strongest antiseptic known and, when used in the mouth, it forms an astringent membrane which seals and protects from any infection. The formation of this preparation is similar to surgeons’ collodion. It holds from twenty-four to forty-eight hours and gives the longest period of mouth medication known. We know that the surgeons of today are depending more and more upon iodine for sterilization. This “dressing” gives us the constant penetrating



effect of this drug. Even though it had no antiseptic properties, the astringent effect upon the gums and the sealing of the gums to the teeth, would make it of great advantage.

Many experiments have been performed outside of the mouth under all conditions but so far, we have been unable to effect this peculiar formation outside of the mouth.

The experiment may be tried of placing No. 1 on a dried section of the gum and the No. 2 over it; no combination takes place. Let the patient spit and the moment the saliva comes in contact with the preparation, a membrane is formed over the coated surface. Under twenty-four hours it is impossible to remove the formation from the gums; after this time, it loosens and comes off in small pieces, resembling rubber dam. Instead of excessive hemorrhage from the operation, we have just the minimum amount.

Outside of the mouth, on the hand, or anywhere, the preparations are put on in the same manner and covered with saliva, under any and all conditions, but no formation takes place. Why?

DIRECTIONS FOR POST OPERATIVE DRESSING:

*The Applicators*

The applicators recommended are made by dipping the end of wood tooth picks into Sandarac Varnish, and

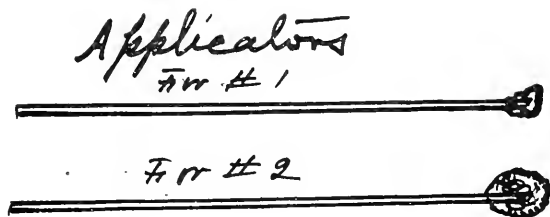


FIG. 43.

twisting a few strands of dry cotton about the end, these making a secure and convenient swab for painting the gums. Several hundred of these can be made in a few moments by your assistant, to be thrown away as used. It is absolutely essential that a separate applicator be used for applying No. 1 and No. 2 preparations.

### *Napkins for Drying the Gums*

The application is greatly simplified by the use of small doilies which can be thrown away. These are inexpensive and used in all treatments about the mouth. Buy from your dry goods store, a bolt of English long cloth, costing about \$1.00. Mark off the stop of bolt into squares about 3x5 inches, some longer, some smaller. Your printer will, with a few strokes of his cutter, convert the bolt into several thousand doilies. These should be sterilized and kept under cover ready for use.

### *Technique of Applying Dressing.*

Immediately after instrumentation and irrigation, the mouth is dressed by drying sections of the gums with the aseptic napkins, which should be held so as to protect the lips and cheek while applying with applicator a coat of No. 1 pyorrhea treatment, giving a moment for absorption; then freely paint over No. 1 with No. 2 letting it flow around and between the teeth; when the napkin is removed and the saliva comes in contact with the medicated gum, the combination of these two preparations forms a membranous coating or dressing similar to that produced by collodion as used by surgeons.

As each section is treated, have patient rinse mouth with dental mouth wash. This at once removes the disagreeable taste and puckering of the pyorrhea treatment. Another section is dried and treated in the same way until all the affected teeth and gums are sealed. It is better to treat the upper jaw first. It is not necessary to

have dressing extend more than 1-4 in. from gum margin. Be careful not to seal the ducts of Whorton and Steno, as this would cause a disagreeable swelling of the glands.

The benefits of the iodine contained therein, we all know. The inflammation is deep seated, and iodine is the one agent that will penetrate. The astringent effect is produced by the tannin. This dressing draws the gums to the teeth; food, saliva, and toxic products are thus excluded. The blood-clot in pockets is protected until organized into new tissue.

This dressing is not to be removed for 24 hours. See the patient regularly every day, removing the membranous or leathery coating of the day before from the gums by a gentle massage with a soft tooth-brush moistened in hot water; the mouth is sprayed with mouth wash, and the dressing of No. 1 and 2 is again applied. After a week of treatment it is not always necessary to use the No. 1 as the septic condition is under control, and the subsequent applications may be of the No. 2 alone.

Sometimes, when an excess of these preparations is used on the gums, blisters similar to the so-called "fever blisters," appear in the mouth. When this condition arises, suspend all applications for a few days, until the condition disappears.

The patient's name is engraved on his tooth brush using a small bur in the dental engine, afterwards tracing with ink. The office assistant keeps these brushes in alphabetical order in a small formaldehyde sterilizer.

At each sitting or treatment the brush is softened in warm water and the teeth brushed *correctly*, as described in the chapter on "Brushing the Teeth"; this removes the pyorrhea "dressing." I have always found it the best policy to brush the teeth myself, having the patient hold a mirror so that he can acquire the proper idea of using his brush. A strand of flat floss silk saturated with dentrifice, is then run between the teeth and the mouth

is sprayed out with dental mouth wash. The same process of dressing is made again and the patient dismissed for from twenty-four to forty-eight hours.

After the patient has been treated about a week or ten days, he brushes his teeth before me at each sitting and in this manner he is compelled to get a good idea of the technique of brushing his teeth. It is sometimes necessary to take the patient's hand and guide him into brushing correctly. After being taught in this manner, if the patient comes up in the future with case of oral sepsis, no one is to blame but the patient himself.

After treating the patient in this way from two to four weeks, and when I am fully satisfied that the necessary tissues has formed to resist the force of mastication, and all signs of inflammation have subsided, several hours are spent in polishing the teeth. Sometimes, I am surprised to find that so much tartar has escaped my notice and every bit of it will be shown up by "AA Pyorrhea Treatment Nos. 1 and 2." I now turn my attention to this and every scale of accumulation is removed with the scalers, the porte polisher or the polishing wheel.

This "treatment" on account of its standing qualities is not for the lazy dentist, but in the hands of a careful man gives the greatest opportunities for making the mouth perfectly clean and for instructing the patient in the proper keeping of his mouth. Its use has proved gratifying both to the patient and ourselves.

Before dismissing our pyorrhea patients, we must have them understand that where the gum is receded and the dentine is exposed, tartar is more readily collected and that these surfaces must be kept free from all accumulation. For this reason, these patients are dismissed only on probation and they are instructed to return in a month for inspection, when they are again taken through the "tooth brush drill". We endeavor to persuade all the resident patients to take up our sys-

tem of monthly prophylaxis either under our own care or that of the dental nurse.

We have under observation, cases treated from ten to fifteen years ago who, before treatment, had been advised that extraction was the only thing that would relieve them; but they have never lost their teeth. Some of these cases were in such a serious condition that a continued neglect of the mouth condition would probably have resulted in death from septicæmia.

An interesting case in the author's experience was that of a woman who had suffered for several months with very severe pains in the head; her physicians had been unable to afford any relief. The surgeons had advised that an operation be performed on the trifacial nerve. Being called in as a consultant, I found a severe case of pyorrhea and by treating this for a few days was able to give the patient almost complete relief from pain.

Many cases of interest like the above are contained in my records but I do not feel that there is room for them in a work of this kind.

## CHAPTER XXX.

### TREATMENT—CONTINUED.

TREATMENT OF MERRITT, PATTERSON, SARRAZIN, DUNLOP,  
LUNDY AND FLETCHER.

Report of an Interesting Case of Pyorrhea and the Treatment Employed. By Dr. A. H. Merritt, New York.

(Dr. Merritt, at my request, wrote me this description of a pyorrhea case in a patient 18 years of age, stating that it is the youngest patient in all his experience, with so advanced a case. The radiographs of this case were made by Dr. George M. MacKee.)

“This case I am seeing for the last time on June 21st. The gums have already resumed normal color, the discharge of pus which was enormous, has entirely ceased, the teeth are markedly more firm and except for slight sensitiveness to thermal shock, perfectly comfortable, though the patient was in constant pain all about the gums, with a calcic abscess on gums over one molar when treatment was commenced in April. Treatment to date has been entirely local, except the administration of calomel and sodium phosphate for constipation. The local treatment consisted of a very thorough scaling of the root of each tooth with scalers made from my own design, finishing in some instances with fine files, with these latter the edge of the alveolar plates, and where necessary smoothing off ragged edges. This was followed each time by the application of weak solution of tincture of iodine (35 to 50%) with careful prophylactic treatments.

“All weakened teeth were ground off so as to relieve them from undue stress. The patient was carefully instructed in the home care of her teeth, proper brush provided and instructions given in its use (two minutes each time, four times daily, straight up and down over

all the gums). This briefly outlines the treatment I follow in all such cases with most gratifying results. This particular case was exhibited at a public clinic before treatment was begun and will again be shown next

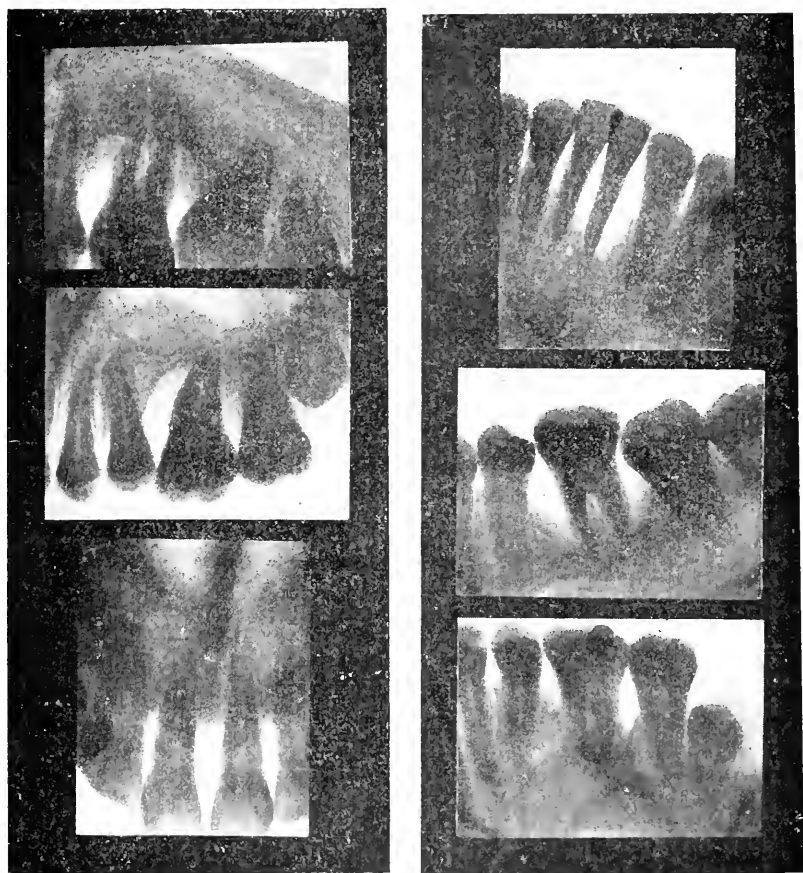


FIG. 44. RADIOGRAPHS OF DR. MERRITT'S CASE.

autumn to the same men to confirm my experience in such cases.

“To me it seems that there is too much theory in the

treatment of all pyorrhea cases, making it appear to be very difficult, when in reality it is comparatively simple."

TREATMENT OF PYORRHEA ALVEOLARIS

BY JOHN DEANS PATTERSON.

(From Johnson's "Operative Dentistry," by permission of P. Blakiston's Son & Co.)

"In beginning the operation of scaling, it is wise to select only that number of teeth for one operation which can be entirely finished at one sitting. If the disease is in the incipient stages, frequently a number of teeth can be treated; if the condition is in the advanced stages, from one to four should be the limit. In all cases each operation should be limited to an hour, for, in the first place, whatever the means used for obtunding, the operation is more or less painful; the teeth operated upon are also left in a condition acutely sensitive to thermal changes, and if many teeth are treated at one sitting, the discomfort is distressing for many days on this account; so it is surely best to confine this discomfort and the painful scaling to a limited time and a limited area to prevent accumulated discomfort in cervical territory on account of thermal irritation, and to prevent shock from the unavoidable pain of the operation. With the correct diagnosis as to the extent of the disease and the selection of the suitable instruments, there must be a determination upon the part of the operator that the roots selected to be operated upon at any sitting shall be entirely freed from irritating deposits and the surfaces left in a condition to encourage the new tissue of repair to form. The surgical part is not complete upon the removal of deposits, but after that these surfaces should be smoothed and polished as perfectly as may be. About the crowns and the cervix of the tooth engine instruments with brushes, strips, rubber cones, etc., of a great variety of shapes, are applicable; beyond the gum margin hand instruments must be used. The various wood and



other points, held in suitable porte-polisher and charged with an abrasive, must reach all possible surfaces. Experience has taught that the time spent in smoothing the roots is well worth the endeavor, for the rapidity and permanency of recovery is greatly enhanced, and the operation cannot be considered completed until as much time is given to the polishing as to the removal of deposits.

“The polishing concluded, then comes the removal of all loosened detritus with the hot water used in a strong force syringe with slender special points which will reach well down into the pockets; these points are best made of silver or German silver, and can be fashioned by any instrument maker.

“The surfaces from which the coating of deposit is removed are a source of great discomfort to the patient in whatever manner they may be treated; the writer uses a 10 per cent. solution of silver nitrate, which, as is well known, renders those surfaces much less painful. When the discoloration is not an objection, a saturated solution of the silver nitrate brings results not secured by any other drugs. The 10 per cent. solution is just short of the discoloring strength. In using the silver solution the parts should be protected from saliva for a few seconds. After this treatment, all inflamed and diseased gum tissue should be bathed with drugs or combinations of drugs which stimulate absorption, act as counter-irritants and obtund irritated surfaces.

“If the operation has been well done, it is inadvisable to disturb the pockets, which are soon filled with the plasma, out of which repair comes. The very common practice of frequent probing and medicating is *strongly condemned.*”

#### THE SARRAZIN TREATMENT.

Dr. J. J. Sarrazin, of New Orleans, La., has worked out an elaborate system of prophylaxis and pyorrhea

treatment. The *Dental Cosmos* (May, 1910) gives his system of treating pyorrheal conditions.

From this article I quote:

“There are two ways of handling a jaw which is affected generally by the disease. One is to begin at the most posterior tooth on one side and stop at the median line; then continue by starting at the most posterior tooth on the opposite side and again come to the median line. This has the advantage of allowing time for molars on one side of the mouth to lose much of their tenderness before the molars on the opposite sides are made too sore for mastication. The second way will grow out of aggravated conditions in some localities, in which instances the operator will see that such places must be operated upon at the start, so that ample time may elapse to watch their behavior while the surgical treatment is being continued elsewhere.

“I am partial to pull-cut instruments for accomplishing just exactly what is wanted on roots. On a smaller scale, the motion of such instruments should be more like that of a vulcanite scraper on a plate, and still more similar to that of a pencil eraser on paper, the push stroke being much lighter, and not like that of a plane on wood. Instrument points should be so directed as to operate on only a small speck of a root surface at a time, making sure of having completely scaled that point before passing to an adjacent spot either horizontally or vertically. Such operating should be done not only where well-defined pockets exist, but also wherever soft tissues fail to closely hug and adhere to cementum. If the alveolar tissue be affected beyond, diseased portions surely lead to it, if they are properly followed. On the other hand, soft tissue should be respected wherever it is attached to the pericementum, but instruments should reach quite to the lines of such attachments in every direction.

“If operations have been severe, wounds should be

frequently irrigated, just as is practiced in general surgery, until such a time as the tissue shows a proper tendency to heal. Bismuth paste following such irrigation acts very favorably, at the same time warding off the danger of impaction of fermentative material.

“However thorough the scaling of a single or multi-rooted tooth may have been, there is safety in making use immediately after operating, of a drug capable of dissolving calcareous particles. Wherever the alveolus has been seriously affected, greater reliance may probably be placed on 50 per cent. sulfuric acid in glycerin, because long clinical experience indicates its marked action on hard tissues, with a reduced irritation to soft ones.”

#### TREATMENT OF PYORRHEA WITH ETHYL BORATE GAS

BY DR. WM. F. DUNLOP, NEW YORK.

“The Dunlop Treatment consists primarily in the introduction of oxygen into the tissues and circulation, and stimulating nerve control. It had long been recognized that oxygen could probably cure pyorrhea, and many experiments have been made with a view to forcing the gas directly into the gums. These attempts failed because pure oxygen unfortunately burns up live tissue as well as dead tissue.

“I use the ethyl borate gas under pressure, which is introduced by means of a small needle at the free margin of the affected gums. The features of this gas as against pure oxygen are: first, that it destroys only dead matter, by stimulating the circulation. The live tissues are not attacked by the gas at all. Secondly, the gas travels through the pus passage and ramifications about the roots and along the jaw, not by pressure, but by its own natural affinity for pus and dead matter.

“When a case of pyorrhea has been cured and the passages have been emptied of microbes and putrifying secretions, the gums refuse to take the gas.

“I believe that this gas cures by virtue of its burning up dead matter and its stimulation of blood circulation. Recent experiments suggest that gas gets results as a germicide by increased circulation.

“Before applying the gas it is first necessary to remove the original cause of the disease, viz.: the local irritation.

“After the operation is completed we are ready for the vapor treatment; the gums are sprayed and all the pockets fully impregnated with the antiseptic from the machine. Before the patient is discharged, place a strip of the pocket packer over the free margins of the gums, pressed firmly in between the teeth, both lingual and buccal. This must remain in place in order to keep the tender surfaces of the gum free from contact with the secretions of the mouth and any other foreign substance. The deeper pockets are to have a small portion of the pocket packer forced up into them, and a warm instrument passed into it while in position. This will hermetically seal the space or pocket.

“When the patient presents himself for the second sitting, the pocket packer is removed, the gums thoroughly sprayed with the machine, the same being properly charged to throw this spray without the use of the needle. You next put the needle on the tube. Opening the valve on the machine it will be found that a dry gas or vapor escapes from the needle. In passing the needle around the gingival margin, or perhaps slightly under it in some cases, it will be seen that the gas is taken up by the inflamed ducts, and it will pass up through the gums, forming little stringers, and will only stop when they seem to reach their destination in the glands themselves. This action is visible to the naked eye.

“Generally, where this inflammation is pronounced, there will be a cyanotic condition of the gums, caused by improper elimination, or a lack of oxygen. This gas

being carried into the tissues is robbed of its oxygen, and the solids are precipitated into the tissues, causing an inflammation, which brings blood to the parts, the same as any other irritation will cause an influx of blood, but with the difference that in this case the tissues are thoroughly oxygenated and circulation is re-established, the cyanotic condition disappearing. The tissues producing cells are stimulated to action, and constantly fed by the application of this gas until they will receive no more. If this is kept up at intervals—with a few days apart—and the surfaces kept clean, we have not only the rebuilding of this lost material, but there is a re-attachment of the root of the tooth to the alveolar dental membrane and a consequent cure.”

The above article on the Dunlop method is given for the reason that it is entirely a new departure in our methods of treating pyorrhea. The author has endeavored to secure more data as to its relative efficiency, but it has not been on the market long enough to gather any definite information.

There are many who claim that deep infection in the alveolar process can be relieved by its use. However, there is some opposition developed against it as voiced by the following quotation from Talbot, in his “Interstitial Gingivitis and Pyorrhea Alveolaris.”

“Within the past year a machine has been placed upon the market for the supposed purpose of forcing oxygen through the tissues in the treatment of this disease. I have watched this process of treatment ‘with fear and trembling’ since the method of application forces the pus germs through the inflamed alveolar process. Why infection does not occur is a mystery. This method of applying drugs and forcing pus germs into the tissues without infection is a strong point in favor of the non-infectious theory of interstitial gingivitis.”

TREATMENT OF DR. E. A. LUNDY, OF LOS ANGELES, CALIFORNIA.

"The majority of cases presenting are simply an oral manifestation of a systemic disturbance. For twelve years past my treatment has been both from a local and systemic standpoint, and results obtained have been far more satisfactory.

"My systemic treatment varies in individual cases, but is arranged with a view to the establishment of a normal elimination and assimilation. I find in the majority of cases that constipation is present with resultant autointoxication, and my treatment is with a view to overcoming such conditions. My first efforts may be by internal medication, but later I resort to that of a proper dietary, in which I try and prescribe such foods as are compatible and require chewing. I also try and prescribe a non-uric acid dietary.

"My favorite remedies for local treatment at present are Dr. Sens solution of iodine and potassium iodide, one part to water four hundred parts, making practically a one per cent. solution."

#### FLETCHER'S METHOD OF REMOVING DISEASED ALVEOLUS.

The following quotation is taken from "Alveolitis—the Disease of Which Pyorrhea Alveolaris is One Stage," by Dr. M. H. Fletcher, printed in the *Dental Summary*:

"To operate in any of these cases is surgery and not dentistry, so that the stomatologist also needs to be skillful in operative surgery to a degree which gives him suitable knowledge and confidence in himself to handle a patient undergoing the removal of part of the alveolar process either above or below. Further, the operator should be so in touch with this patient and the extent of the operation as to know whether the operation should be performed under local or general anesthesia, and whether it should all be done at once or at intervals of a few days or weeks for general and systemic compli-

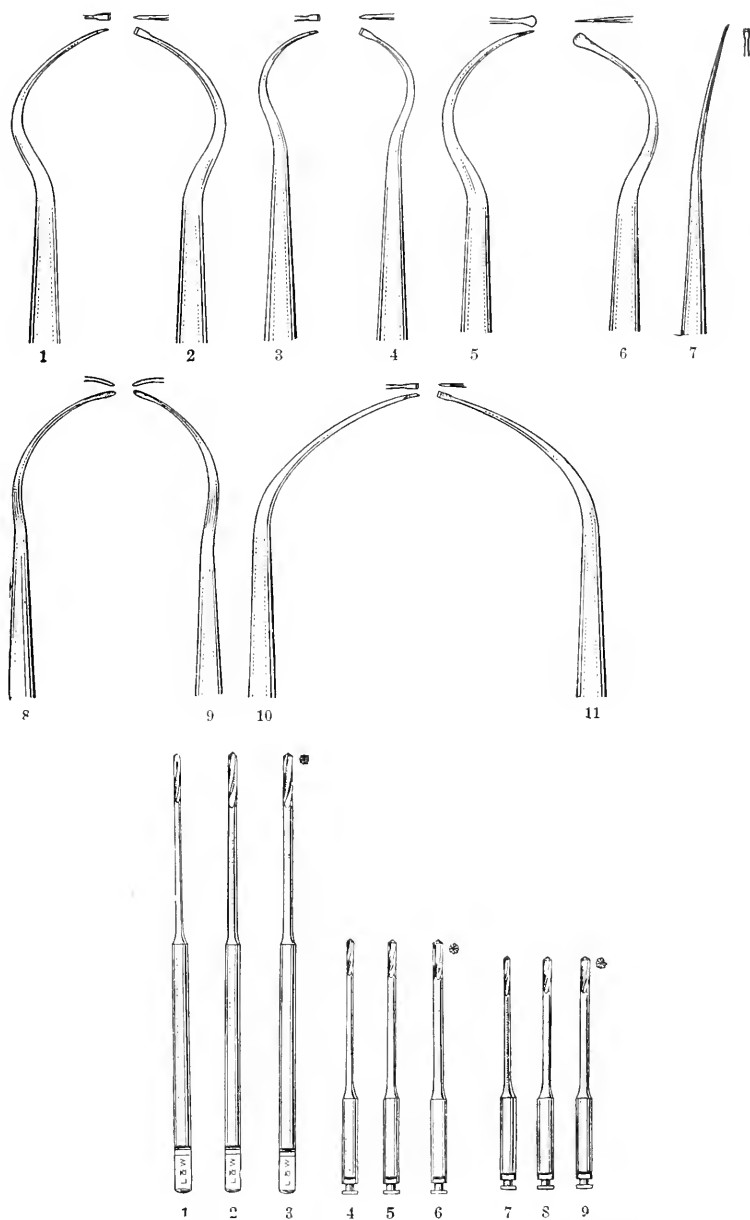


FIG. 45. FLETCHER'S SET OF BONE CURETTES AND ALVEOLAR BURS  
FOR CUTTING AWAY DEAD AND DISEASED BONE. NOT  
INTENDED FOR REMOVING DEPOSITS.

cations from secondary and acute infection may occur at any time.

“The curettes, or hand instruments are all of the hoe and hatchet type, varying only in size of blade and length and shape of shank. The attempt is made by these variations to reach any extended tract of necrosis. The necrosed portions are usually friable—that is, in the state of osteoporosis—and can easily be cut away with the curettes; but certain phases of the disease and certain kinds of infection often result in osteosclerosis; that is, hardened or eburnated bone, on which the curettes make little headway. For cutting these hardened bones I have made some extra long bone-cutting burs, both for the straight and right angle hand-pieces. The contra-angle seems to be more suited to the work, however, than the right angle. The burs for the contra-angle will reach all cases in the lower jaw and most of the upper, but a bur two and one-half to three inches long—that is, one long enough to reach to and into the antrum—is often necessary for the upper jaw.

“The laws of regeneration do not permit of complete healing of bone tissue inside of several weeks at the shortest, and often require several months, so that patience and careful watching are necessary on the part of both patient and doctor. One patient now on my list for nearly a year, who would not submit to a radical removal of cancellous bone in the superior maxillary, has submitted to a small amount of removal from time to time, and is gradually recovering under two dressing treatments a week. This case, however, was the result of a dental abscess arising at the apex of a superior lateral which had discharged into floor of the nose.

“After curetting and burring have been done, the cavities should be washed out with a warm antiseptic solution to remove the cuttings. The blood should be allowed to clot in the cavity. My plan is to be careful not to disturb the blood clot as long as it remains aseptic. If there



is a tendency for pus to form, the wound should be washed out every one, two, or three days, according to conditions, and, if pus continues after ten days, a second, third, or even more attempts must be made to remove the offending material.

“Aseptic blood clot is Nature’s ‘false work’ or scaffolding on and into which she builds all new tissues, no matter of what kind. The less the healthy clot is disturbed, the more prompt is the repair. In the blood clot is formed the granulation tissue of repair, which is the second stage of the building of new tissues. Any disturbance to these granules is also a hindrance to repair; hence packing is seldom called for.

“If I have suggested anything new or valuable, I believe it is the necessity of either curetting or burring about all teeth where the disease is found, and of more thorough removal, if the disease is deep seated.”

## CHAPTER XXXI.

### TREATMENT—CONTINUED.

A TECHNICAL DESCRIPTION OF THE SURGERY OF THE ROOT  
SURFACE AND THE INSTRUMENTS MOST USEFUL  
IN ACHIEVING IT.

BY THOMAS B. HARTZELL, D. M.D., M. D., MINNEAPOLIS.

“In undertaking to write an article descriptive of the technical procedure, which must be observed in successfully treating pyorrhea, I realize that I am undertaking a very difficult task. To portray in words or visualize technical procedure, is always difficult, but by the help of word pictures and illustrations together, I hope to be able to convey a comprehensive idea of the operation.

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“The necessity for root surface surgery is now so thoroughly understood that we need not discuss that phase of the question at all, though it will be wise to discuss the histology of the root surface in order that we may have a reasonably clear idea of the necessity for the operation, and also that we may know how much of the root surface we should remove and where the cutting should stop.

“The root is suspended in its socket, as we all know, by fibres of sharpey; these fibres originate in the alveolar process. When the bone of the process is lost from any cause whatever, then these fibres hang dead upon the root surface and their decaying remains afford culture media in which micro-organisms may rapidly grow and accumulate. The root surface is, therefore, uneven and pitted with thousands of small depressions. These depressions were occupied by fibre ends, and offer to the eye, when observed under the microscope, a honey-comb like surface.

“The operation on the root surface may involve two things: first, the removal of any calculus deposited upon the root surface; and, second, the removal of the pitted root surface itself. Observing the structure of the root, from the pulp chamber outwardly, we note first that dental tubuli form the great bulk of the root. Just external to the tubuli, we may note a layer of typical bone which contains thousands upon thousands of lacunae connected by branching canaliculi. Approaching more nearly to the surface of the cementum, we see that the lacunae and canaliculi become fewer and fewer until the root surface is almost reached, at which point we note a narrow zone of bone which contains neither lacunae nor canaliculi. This dense layer is not clearly defined as something that could be stripped up and peeled off, but, nevertheless, nature seems to have deposited this thin layer of hardened bony material as a foundation into which the Sharpey’s fibres insert to form the suspensory ligament which is the sling or stirrup by which the tooth rides in its socket.

“The object of skinning the root surface is to rid that root surface of its bacterial holding power. Therefore, the amount of root surface which may be cut away with benefit to the tooth is that portion external to this dense layer which was created to support the fibre ends. And, because of the fact that this dense layer is very thin, one should guard carefully against cutting enough of it away to open the bone cells which are so plentifully distributed in the body of the cementum. Therefore, one should work with instruments so designed as to make it impossible in any single stroke to penetrate this hard layer.

“The instruments should be so designed as to offer the greatest amount of steadiness and accuracy of movement. To that end, it is desirable that the cutting bit, which is used to skin off the porous surface, should be flat and thick and sharpened to a right angle. It is also

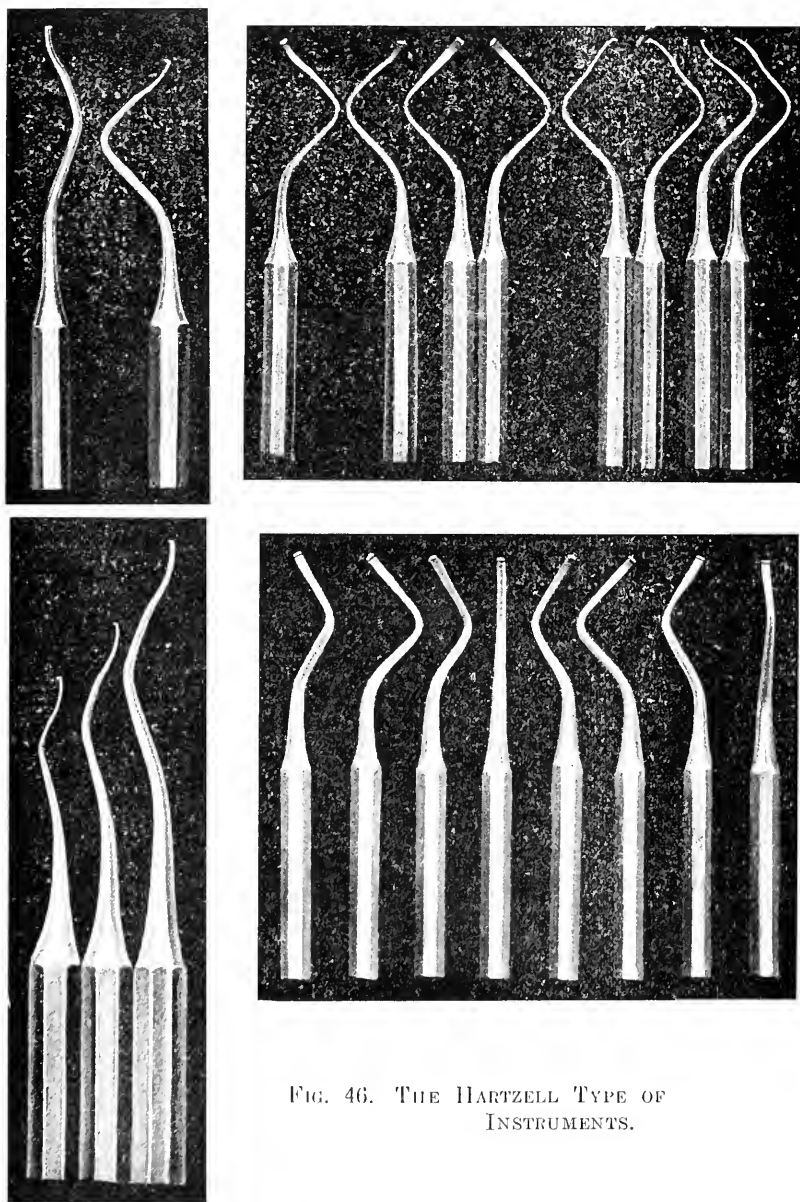


FIG. 46. THE HARTZELL TYPE OF INSTRUMENTS.

desirable that the instrument should rest on at least two points, rather than on the cutting edge alone. If the instrument's bit rests upon the cutting edge and that portion of the shank immediately contiguous to the cutting edge, we have the so-called two-point rest instrument, which certainly offers greater security and accuracy of movement than a razor-edged, one-pointed instrument possibly could afford. The following is an illustration of the instrument to be applied to root surfaces.

“On account of the unevenness of the root surface and on account of its convex and at times concave character, it is necessary to have instruments which can be readily adapted to convex surfaces as well as to concave flat surfaces, in order to accurately skin every bit of dead membrane pitted surface from any given root. This necessity at once creates the demand for three types of plane-heads. By the word “plane-head,” I mean to describe the cutting bit and the portion of the shank immediately contiguous to it, which makes the two points of contact to the root, which must or should be in contact with the root surface as the instrument is moved. The plane-head, therefore, is to the tooth's root plane just what that portion of a carpenter's plane is, which is immediately in front of the cutting bit. It limits the depth to which the cutting bit must penetrate the tissue, and, as stated a moment ago, we need three types of plane-heads for ordinary tooth root surface surgery: concave plane-heads to fit convex root surfaces; convex plane-heads to fit concave root surfaces; and flat plane-heads to fit flat root surfaces. This at once necessitates three types of plane-heads in any efficient set of instruments for root surface work. To that end, the author divides the instruments into three groups for these three types of surfaces.

“The next necessity, which the operator feels keenly,

is the need of different sizes of instruments: long instruments for deep pockets, medium length instruments for medium depth pockets, and short instruments for shallow pockets. This again divides the instruments into three groups, dependent on length of the shank.

“The third need which the operator is compelled to notice is that in order to work far back in the mouth with ease, it is necessary to bend the shank of the instrument at an angle which will permit him to reach back in the mouth and up or down, according to whether he is working on the upper or lower jaw. Therefore, the case of instruments is again divided into large groups. One group of instruments is intended for working far back in the mouth and exhibiting such bend as will readily permit facile movement. The other group, which is more nearly straight, the operator can apply in the anterior part of the mouth.

“A fourth need, which must be met in any given set of instruments, is to have a sufficient number of pairs of instruments to enable the operator to apply his planehead to every aspect of a root, without changing his position in relation to the patient, without changing his finger rest, and without flexing his wrist.

“To that end, the various types of instruments are divided into families of eight each. Each family of eight are so designed as to enable the operator to work upon eight different sides of any single root, without changing his initial finger rest or the bend of his wrist, so that the whole set of instruments at command of the operator, whether it is for concave, convex, or flat surfaces, or whether it is an instrument with a large bend for use far back in the mouth, or an instrument more nearly straight for the anterior part of the mouth, will present a series of four pairs of planes in whatever size, bend of the shank is desired. This really affords, in every group of eight, four pairs, of which one and five afford instruments to fit the mesial and distal of any given root; two and six making a second pair; number two designed

to fit the first right molar of any given patient, two and six designed to present a pair of blades which will fit the mesial buccal and distal lingual surfaces of the molar in question. Three and seven of this group of eight present a pair, which fits the buccal and lingual surfaces of a patient's right lower molar. Four and eight constitute a fourth pair designed to fit the distal buccal, and mesial lingual surfaces of a right lower molar.

"It does not necessarily follow that the operator need use every instrument of any given group of eight to plane a lower molar, but it is exceedingly helpful to have the instruments so planned as to make it possible to approach at least eight different aspects of any tooth in the mouth, without changing finger rest, if the operator so desires.

"A fifth essential is that in all of the instruments of whatever type, concave, convex, or flat, long, medium, or short, for operation far back in the mouth or almost straight or slight bend for operation in the anterior part of the mouth, or for what particular tooth or surface an instrument is intended, the cutting blade of the instrument should be directly in line with the center of the handle. This makes every instrument, no matter what bend the shank may have, in effect a straight instrument."

## CHAPTER XXXII.

### IMPLANTATION.—BIFURCATION TREATMENT.—REMOVAL OF PULPS.—AMPUTATION OF TOOTH ROOTS.—TREATMENT OF PYORRHEAL ABSCESS

For many years the experimental surgeons in dentistry have endeavored to find some system whereby lost teeth could be replaced in the jaw by other human teeth. Dr. Younger was one of the first to make a success of this operation and it is to be doubted whether his first technique has been improved upon.

Dr. Kells also makes the practice of the implantation of one missing tooth, but these are planted in a favorable situation. I have seen in his office a lower molar tooth that had been implanted for seven or eight years.

Dr. Robert Good, of Chicago, is doing a great deal of this work in pyorrhea cases. His method is so unique and original that I will describe it in detail as I have seen it carried out in his office.

Some years ago, a travelling man, a patient of Dr. Good's, presented himself to me for treatment of his gums. He stated that Dr. Good was beginning to treat him. His anterior teeth had all protruded and had rotated in their sockets. At that time, if he had asked me, I would have told him to have them all extracted as the only thing to do, and in fact if the case had been one of my own, I would have extracted all the teeth and placed a bridge. However, I gave him a treatment and asked him on his next trip here to stop in and let me see what Dr. Good had done. In about a year the same man presented himself again; this time his teeth in new sockets and in perfect alignment and comparatively firm. Had I not seen the case before, I could not have believed that this could have been done.

Dr. Good's assistant haunts the places where teeth are extracted, hunting for peculiar kind of teeth. The



tooth he wishes is that of an old person, especially if it has an exotosis on the end of the root. The search has evidently been successful, for he had large jars of these kept in liquid in his laboratory ready for selection on a moment's notice.

Dr. Good seems to think it a very simple matter, if one cannot cure a tooth affected with pyorrhea, to extract the tooth, clean it off, deepen the socket, and force the tooth back, secured by a retainer of twisted linen or silk thread. If the tooth is out of line, which they frequently are in pyorrhea work, it is rotated with one movement of the forceps.

However, the most original work which I saw was where an upper molar tooth was needed for an attachment for a bridge. A new socket was bored at about the position of the second molar and a large cuspid root, with the crown cut off, was driven tight into place. Previous to the insertion, he had made a platinum coping so as not to disturb the root when he was ready to make this bridge.

He uses no special instruments other than a Younger root reamer. The canal is properly filled and the tooth, having stood in a strong solution of lysol while the socket was being made, without being washed off, was driven home tight. After such a tooth has stood for some four or five months it is generally ready for bridge work.

For the encouragement (?) of those who wish to try this for bridge work in pyorrhea cases, I will say that I have tried it on several teeth, but to this date I have never been able to get one to stick in a pyorrhea case.

Another method of replacing pyorrhea teeth when they are needed for extra abutments for bridge work is by inserting some device made of metal; one of these is made and sold by Dr. Greenfield, of Wichita, Kans. It is a platinum frame work made in a circle which is inserted into the jaw to fit the trefined socket which has left a central core. This method, while possibly the best one now in vogue for attaching teeth to a bridge at the

alveolus, is not so successful in pyorrhea cases, because the alveolus, having been partially absorbed, does not give the proper support.

To those who desire to experiment along this line is suggested the following method, which has been tried by several of our practitioners: either drill a new socket or use the old one and select a common wood screw with large threads which will fit the socket tightly. This having been fitted and cut off to proper length, is unscrewed, the impression taken, and cast in either tin or silver. A hole is drilled in the larger end and the coping fitted. The cast screw is then forced into place and after a few weeks, when the tissues have about resumed their normal state, the crown or bridge is fitted thereon.

After implantation, by the use of AA Pyorrhea Treatment, we are enabled to seal the gums to the teeth, prevent infection and keep out all food particles. This preparation will hold from 24 to 48 hours, is an astringent, and really acts as a splint, drawing the gum close to the teeth.

While there are some men who seem to be making a success of implantation work, it cannot be said that it is as great a success in pyorrhea cases; greater absorption of the alveolus having taken place together with the greater danger of infection, makes the chance for holding less than in a healthy mouth. Still this is a great field for research work and it is to be hoped that at some future time methods will be devised for overcoming these difficulties.

#### TREATMENT OF EXPOSED BIFURCATION IN MULTI-ROOTED TEETH

When there is an exposure of the bifurcation of multi-rooted teeth, especially the lower molar or buccal roots of the upper teeth, Smith suggests making a positive retention cavity between the roots and filling this with hard gutta-percha, forcing it, while soft, against the process and gums and finishing it flush with the tooth. He

says, further, that this simple procedure will arrest all recession at this location.

The copper cements also give excellent results in good locations and have the advantage of moulding over the gum tissue without pressure and into nooks where it is difficult to place gutta-percha.

#### REMOVAL OF PULPS IN PYORRHEA WORK.

Whether or not it is best to remove pulps in operating for pyorrhea, is a subject which has not been agreed upon. There are operators of well known ability who never destroy a pulp if they can avoid it. Other dentists, equally capable, destroy pulps in pyorrhea work. These latter men claim that in the removal of the pulp, the nutriment is diverted to the outer surface of the tooth, where it is most needed. It has not yet been explained by these operators, the *modus operandi* of this changing of nutriment. They claim that a devitalized tooth is never attacked by pyorrhea, but it has been borne out by observation that this is not true, nor does the author deem it advisable to remove the pulp of the tooth for the purpose of curing pyorrhea, for if there is ever a time when a tooth needs all the vital force and nerve energy which it originally possessed, it is at the time when it is lame from pyorrhea; whatever results have been attained from the removal of pulps, were in those advanced cases, where the pulp was infected by the extension of the disease or was cut off by tarter deposit at the end of the root. Such teeth are generally extracted, but the teeth which we leave for operative procedure seldom have pockets extending to the end of the roots. It is not advisable to remove these pulps. However, if extra sensitiveness, due to infection, is a constant symptom, it is advisable to remove the pulp; remember that it is a peculiar coincidence that teeth affected with porrhea seem to have the most crooked roots.

## \*AMPUTATION OF ROOTS.

If, on examination, the probe can be pushed entirely around the root of any multi-rooted tooth, and over the apex, then it is useless to attempt to save this root as it only constitutes a foreign body, and together with the surrounding pocket, forms a trap for future infection and food. In such cases, provided the other root or roots have good attachment, amputation of the offending root may be effected and the remaining portion of the tooth made to do service for years. There has been a great deal written on the subject of amputation of roots for alveolar abscesses, but few men outside of specialists in pyorrhea seem to have realized the great value of this simple surgical procedure.

I have performed this operation successfully in several hundred cases. Many of these teeth so operated on over eight years ago, are still proving successful abutments for bridges. I am therefore led to urge upon the general practitioner the adoption of this procedure as a routine method in suitable cases.

Many dentists with whom I have talked, have expressed the idea that it is extremely difficult, and that they were afraid to undertake it. This is an erroneous supposition; the field for operation is uncomplicated by any important anatomical structures such as nerves or arteries, and is easily accessible, without much cutting or the necessity for an anesthetic. In pyorrhea work this operation is confined to multi-rooted teeth, that is, molars. The one thing to be decided before determining to amputate the root of the tooth is that the disease and the destruction of the surrounding bone is confined to this one particular root.

The most frequent places where amputation is needed are: first, the palatal root of the molars; second, the posterior buccal root; third, the anterior buccal root. On the lower molar teeth we most frequently amputate the

posterior roots; these are the most difficult roots that we have to remove.

#### TECHNIQUE OF ROOT AMPUTATION.

This operation, to be satisfactory, requires that the root be normally separate from the other root, or roots, that is, they must not be fused together for their full length. The small curved probe or pyorrhea instrument can be introduced between the roots to determine this. If the root is anastomosed almost to the top with its adjoining root, the case is not one for successful operation. This caution applies particularly to the buccal root of the upper molar, as it is very seldom that a complete union of the palatal root or the lower molar root takes place. Before beginning the operation, it is advisable to remove the pulp of the tooth and fill the pulp canals in the best way possible, for after one of the roots is taken out, it is very difficult to find the canals. However, the writer has frequently removed roots of teeth without paying any attention whatever to the tooth pulps, for the shock of going straight through so paralyzed the nerve that there was little pain to the operation. The best instrument for this operation is a long shank cross cut fissure bur. This is to be used in a right-angle hand piece. The bur is introduced in the bifurcation and with engine revolving rapidly give the hand piece a saw-like motion towards the crown of the tooth; this produces the proper slant for easy removal of roots and self cleansing space; the angle at which we point the hand piece towards the crown of the tooth has all to do with the easy removal of the separated root. As a general thing, after separation of the root, it drops back into the pocket which surrounds it and can be easily withdrawn with a pair of pliers. As the tooth upon which we are operating may be loose, the operator always braces the tooth securely, either with his hand or by placing a small amount of warm modelling wax against several of the

teeth, making a brace so as not to have any undue force on the part of the tooth which we wish to preserve.

It is not advisable to start on one side of the tooth and later remove the bur and begin from the other side of the root, as this makes a ragged operation. However, this may have to be done in some cases. The root having been removed, the next step is to polish the surface from which it was removed, so that there will be no sharp or jagged edges to irritate the gums or catch food. If the tooth is a large upper first or second molar, it is sometimes advisable to remove that part of the crown of the tooth that overhangs the place where the root came from, as too much leverage would tend to tip the tooth in that direction. This is not so necessary in the lower jaw, as here the crown of the tooth is braced by the adjoining tooth. The socket from which the root was extracted needs very little attention except to be thoroughly washed out with warm water and some mild antiseptic solution to keep it free from food until it fills up. In some of our cases it is hard to tell that an amputation has been done, as the gum soon falls into place where the root was removed.

As this operation is performed in such a manner that the parts are easy to keep clean, it has not often been found that any decay set in from exposure of dentine. Sometimes it is very important to make correction of malocclusion in these teeth in order to prevent any undue force being put upon a tooth which is naturally weaker than normal. In fact, it is a good idea to lower the occlusion on a tooth from which a root has been taken.

#### AMPUTATION OF ROOTS FOR BRIDGE WORK.

The prettiest result of root amputation is where the remaining part of the tooth is to be used as a bridge abutment. Every abutment which can be used in bridge work adds to its strength and should be saved, especially in pyorrhea mouths where all the rest of the abutments

may be in a shaky condition. We have all observed in a boat landing where piles were being driven, that one or two of them seemed loose, but when lashed together an ocean steamship could hardly shake them. In the same way it is desirable to give every possible support for bridge work, even though some of them, alone, may seem very weak.

In using these teeth for bridge abutments it is desirable that the whole of the crown be removed and small platinum coping be placed just under the gum margin. I have always found this to be easier and of better success.

#### TREATMENT OF PYORRHEAL ALVEOLAR ABSCESS.

If the operator is familiar with the formation of a pyorrheal abscess (described elsewhere) the treatment is a simple matter.

The patients come in very much alarmed at the sudden condition of one of their teeth. This alarm can be quickly turned to quiet and confidence if the proper treatment is given.

Do not attempt to lance the swollen area but with a Younger instrument, Number 1 or 2, carefully insert at cervical edge between gum and tooth toward the swelling. This should not hurt the patient; almost the weight of the instrument will be sufficient to enter the pocket and allow the pus which is under pressure to escape. Now, at this stage, do not attempt to do any root scraping or planing, but with a small pointed syringe insert at the point where the instrument was passed and using gentle pressure wash out the cavity. Repeat this several times. Do not use any strong irritating liquids, but use either hot normal salt solution or water with phenol, five drops to six ounces. This operation should be repeated the following day.

At some subsequent date when the tissues are less painful, the tooth should be treated for the pyorrheal condition.

## CHAPTER XXXIII.

VACCINATION TREATMENT.—BRIDGE WORK AND  
SPLINTS FOR PYORRHEA.—THE X-RAY AND PYORRHEA, MACKEE.

### AUTOGENOUS VACCINATION FOR THE TREATMENT OF PYORRHEA.

Autogenous vaccination for the treatment of pyorrhea. The author has been so successful in treating pyorrhea according to methods described elsewhere, that the subject of vaccines has not had much attention in his practice. In discussing this subject at the last National Dental Association in Washington, Dr. Rhein made the statement that when vaccination became necessary, the ordinary dentist was not a necessity because the patient was a fit subject for the hospital.

Several years as oral surgeon on the staff of the City Hospital of Atlanta, gave me an opportunity to see extreme cases of oral sepsis. At that time only stock vaccines were to be had, and we used only the vaccine of the predominating infection. I never could see any special improvement and several of the patients died.

In order that the reader of this book may become familiar with the elementary facts on which this treatment is based, I give the following article by Dr. George B. Harris, which was published in the *Dental Summary*.

"The use of vaccines in the treatment of pyorrhea is not to take the place of the local treatment of instrumentation in any way. However, it becomes a very valuable agent when used to overcome the infection present and in maintaining a condition that makes the growth of bacteria impossible over a period of sufficient length to permit regeneration. It not only does this, but it also prevents the recurrences of pyorrhea after a cure has been effected by fortifying the individual against the bacteria. Protection against recurrence is as important as a cure itself. Stock vaccines may be used to do this, but it has been my experience that the Autogenous Vaccines give from 50 to 75 per cent. better results.

"The first step in making a vaccine of this kind is the obtaining



of the pus. This should be obtained in as pure a culture as possible. Carefully remove all tartar deposits from the teeth; paint the tooth and gum with iodine and dry. On the following day remove all food particles, dry with alcohol again, paint the gum with iodine, and dry. Then carefully force out a small amount of pus from under the gum, collect on a sterile platinum wire and inoculate an agar tube. Allow this to germinate from twenty-four to forty-eight hours. If a pure culture has been obtained, which is generally the case if the preceding operations have been carefully done the vaccine may be made directly from the first culture and several days saved; otherwise new cultures must be made from the predominating culture in the initial tube.

"Remove as many of the cultures as possible, care being taken not to take up any agar with the cultures. These are now transferred to a tube containing distilled sterile water. This is shaken vigorously to break up all clusters. A centrifugal machine should be used for this purpose, but if one is not to be had it can satisfactorily be done by hand. One-half a cubic centimeter is now drawn up and transferred to another test tube. This is used in the determination of the number of bacteria we may have in the concentrated solution and is not made into vaccine. To this is added two cu. cm. of water to make the counting easier and more accurate. About half a cu. cm. of this diluted solution is now drawn up in an opsonizing pipette and an equal amount of normal blood taken directly after. This is blown out on a slide and mixed. A drop is then placed on a cover glass, dried, mounted and stained. Place the slide on the counting chamber and count the corpuscles and germs in the successive fields until at least 250 corpuscles are counted. Since there are 5,000,000 corpuscles in a cu. mm. of blood, by a simple proportional equation we can determine the number of bacteria in the dilute solution. By multiplying the number of germs in the dilute solution by the number of times it was diluted, we determine the number of germs in the concentrated solution per cu. mm. Since there are 1,000 cu. mm. in a cu. cm., by multiplying the number per cu. mm. by 1,000 we determine the number per cu. cc. For example: Suppose we counted 250 corpuscles and 50 bacteria. Since we know that there are 5,000,000 corpuscles on one cubic millimeter of blood, the following proportion is established:  $250:5,000,000::50:X$ .

"Solving this proportion, we find there are 1,000,000 bacteria per cu. mm. Since there are 1,000 cu. mm. in a cu. cc. we find 1,000,000,000 bacteria to each cu. cc. in the dilute solution. Since we diluted the solution four times, there are 4,000,000,000 bacteria to each cu. cc. in the concentrated solution. The vaccine is now ready to be standardized. It is first diluted to the strength we wish to have it; heated at 60 degrees for an hour, then 4 per cent. tricoresol added to prevent contamination, and sealed.

Any loose tissue may be selected as the site of injection. The most important things to look out for are:

- "1. Be sure the solution is sterile.
- "2. Absolute cleanliness of the skin at the site of injection.
- "3. Use great care in avoiding veins.
- "4. Be sure the count is accurate."

#### BRIDGE WORK IN PYORRHEA.

In treating a case of pyorrhea, bridge work is often necessary. The character of this work has a great deal to do with the permanency of our results; many specialists prefer to do this mechanical work themselves according to their own ideas, and in fact, one or two specialists will not accept a case referred to them by other dentists unless this provision is made. The reason for this is that considerable deviation from the regular established system of bridge work is often indicated, in that we have to use more teeth for support than we would in a normal mouth.

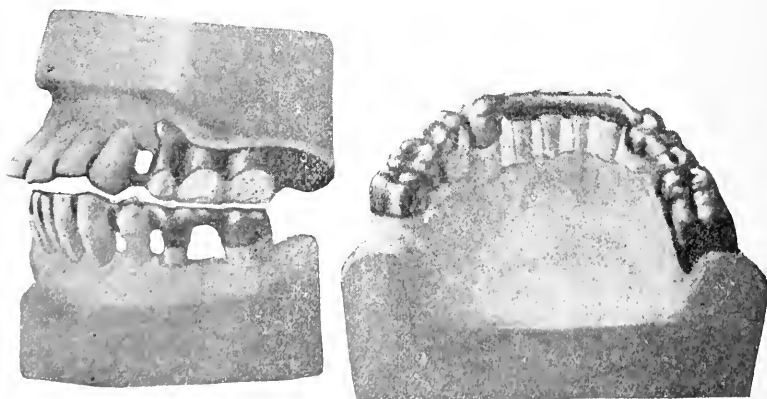


FIG. 17. STYLE OF BRIDGE WORK MOST USEFUL IN PYORRHEA MOUTHS (TIERCH).

In the construction of this work all sides of the abutment teeth should be accessible for instrumentation, and the central idea for bridge work of this kind is that it

must be so constructed as to be easily cleaned by the patient. This fact is sometimes lost sight of by the mechanical man whose sole idea is to restore the lost teeth and to fill the space completely.



FIG. 48. LINGUAL SURFACE. UPPER JAW. BRIDGE WORK IN PYORRHEA CASES.

After finishing our treatment, if we find several teeth still loose and several to be replaced, we can not only replace the lost teeth, but can bind the loose ones together furnishing the best kind of splint. Thus the pressure is distributed over a larger area so that it is not too great on any one tooth. For any extensions on the bridge, it is well to make saddles to extend on either side of the alveolar ridge so as to give the extension support from lateral strains. All soldering of abutments should be as near the occlusal surfaces as possible, so that we may have better access to the root surfaces in case a pocket develops there at any time. Smaller amounts of solder can be used if platinum wire is soldered or waxed in and cast into the abutments at the places of joining.

#### SPLINTS.

Many varied and ingenious devices for the retention of loose teeth in pyorrhea have been described in dental

journals and demonstrated in clinics; the author discusses, in the following pages, the use and making of splints.

The very fact that teeth have to be splinted in order that they may be saved, makes them a source of frequent infection, and they will need frequent attention from the dentist to keep them in proper shape.

Splints are of two kinds, temporary and permanent. The temporary splint is of greatest advantage. It is sometimes well to use some form of temporary splint at the time of operation so as not to give the teeth too much strain during the operation. If this is not done, it is well to do so after the operation, so as to give the teeth a rest and chance to regain some strength. This applies particularly to the lower anterior teeth and the superior laterals.

Perhaps waxed floss silk, laced in between the teeth in figure 8 fashion, forms the best temporary splint; this can be removed every day or two. To prevent the splint from slipping down into the gums a little cement can be placed upon the surface of the teeth. Orthodontia wire is also excellent for this purpose. Dr. J. W. Jungman suggests the following: "Roll out the ordinary Angle orthodontia wire to a ribbon; anneal and gold plate. Start from left to right by forcing the wire down between the bicuspid and cuspid; then lace it, carrying the strands over and under so as to lock them. At the right cuspid, wind one strand around the other, and force it between the cuspid and bicuspid so as not to irritate the lip. Where there are one or two loose teeth, I usually carry to the adjoining teeth only."

#### DR. W. F. SPIES' TEMPORARY SPLINT.

"There are many ways in which a temporary splint can be made, either by the use of silk or wire. Illustration shows a form of temporary wire splint which need not be changed, is clean, and if properly applied does

not draw the teeth together as does the silk. It is made by using 26 gauge gold ligature wire for the slip-noose and 30 gauge for the wires between the teeth. Make a slip-noose over the teeth to be enclosed, by bringing one end of the wire over the other, but not twisting them together. Cut short pieces of wire to be used between each two teeth, twist the ends together, and draw tight. These wires should be cut to such length that the ends may be turned back into the interproximal space without touching the gum tissues. The ends of the wire of the first slip-noose should now be twisted together."

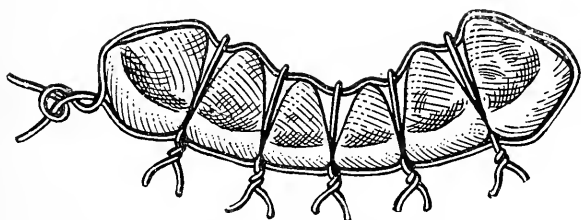


FIG. 49. TEMPORARY WIRE SPLINT (SPIES).

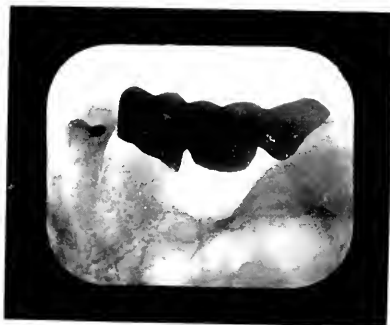
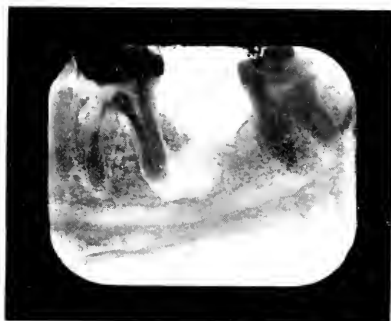
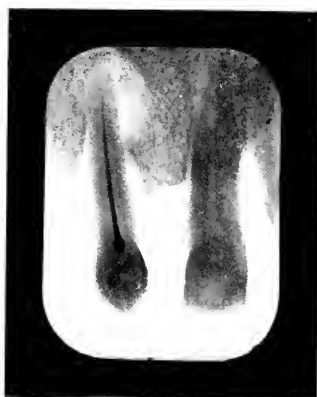
Dr. Robert Good's method of ligating teeth is to use A, B or C sewing silk, having it well waxed. Select tooth for anchorage, then pass ligature twice around this tooth (making double loop) and fasten by making double knot and single knot on top double one. Now make single loop around next tooth and make knots the same as before and continue in this manner, until you have included the number of teeth you wish to ligate or make fast. When the last tooth to be included is reached, make double loop again and return making the loops the same as before, this will give two rows of ligatures, making the teeth quite rigid. Three rows or more may be used, making a splint that will remain for six or eight weeks. Care should be taken to place the ligatures on the teeth in a position where they will slip neither up or down, but remain where placed.

In using these temporary splints, it is well to be certain that no undue strain is placed on the teeth, pulling them out of position. Where space exists, many knots may be tied to bridge this, or the wire twisted between the teeth, so as not to draw them into the space.

The writer has seen cases where the wire was placed for temporary splints to be removed at a stated time, but for some cause the patient got away without its being removed, and it remained several years without discomfort. Wire has the advantage of being easily put on and easily replaced; it shows no metal and is easy to keep clean. If it is desired to be permanent, little nicks can be cut with a fissure bur run between the teeth; this will hold the wire secure and prevent it from slipping into the gums. Sometimes a little cement to hold it in place will last for years. The advent of cast work has opened a new field for the ingenuity of the operator in the line of dental splints; small inlays can be made which are easily inserted and this will probably be the means adopted for splints in the future. The old method of swaging these splints and soldering them up did not produce the results which we hoped it would.

In devising the splint, the main requisite is to hold the tooth rigidly in its proper position. It must be self-cleansing or easily cleaned by the patient. Again, it must not extend to the gum margin to fill up the interstitial space, but must be left so that instrumentation of the root surface can be done with ease.

However, after all is said and done, it seems to me as though it is not of the most benefit to retain the teeth which have to be placed in splints, and it does seem to be the best policy in the beginning to extract those teeth which the operator will soon learn by experience will never be kept in a healthy condition, and which may require extraction later on.



RADIOGRAPHS ILLUSTRATING "THE X-RAY AND PYORRHEA,"—MACKEE.





## THE X-RAY AND PYORRHEA.

BY GEORGE M. MACKEE, M. D., NEW YORK.

“While the value of the X-ray in pyorrhea alveolaris is exceedingly limited, yet there are factors of interest and of importance that should be enumerated and to some extent elaborated.

“In the first place it is extremely doubtful if the X-ray possesses any therapeutic value in Rigg’s disease, either in the early or late stages. It might be explained that there is evidence in support of the contention that when the X-ray is applied to certain superficial bacterial affections a local autogenous vaccine is produced. We have here a possible explanation of the rapid involution of some types of acne and sycosis when exposed to the X-ray. It should be stated, in this connection, that the X-ray has no direct effect upon bacteria. Pyorrhea, however, affects tissues that are more deeply seated than are the diseases just mentioned and these tissues are so located that the ray loses much of its therapeutic value before reaching them. Theoretically, perhaps, certain types and stages of pyorrhea should be benefited by radio-therapeutic measures, but from a practical standpoint, there are no authentic or verified reports of pyorrhea being controlled by radio-therapeutic measures. And it should be remarked in passing, that small doses of the X-ray applied over a long period of time may cause atrophy of the glandular and interstitial tissues, sclerosis of the deeper lymphatic and blood vessels, dilatation of the superficial capillaries and, finally, precancerous and even malignant degeneration. And, furthermore, these changes may not become manifest for months or even years after cessation of treatment.

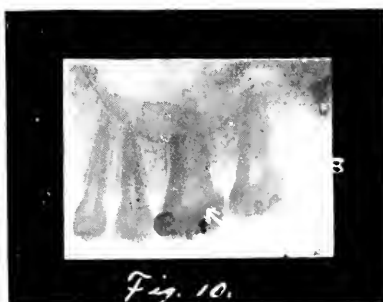
“Whatever value the X-ray possesses in relation to pyorrhea is in a diagnostic capacity. A radiographic examination will determine if the alveolus has or has not

become involved in the process—providing, of course, that the bone has become sufficiently diseased to be radiographically depicted. Naturally the extent of the bony involvement may be detected. The presence of suspected or unsuspected complications may be also elicited—as, for instance, supernumerary, unerupted and impacted teeth, apical abscesses, disease of the maxillary sinuses, exostosis, cystic degeneration, etc.

“Typical pyorrhea, when well advanced, presents a rather characteristic radiographic appearance (Fig. A, published in *Items of Interest*, June, 1913, Dr. A. H. Merritt’s patient). Here there is a light shadow (dark shadow on the original radiograph) extending from the margin of the alveolus around the roots and apices of the teeth, and indicating that the greatest destruction of bone has been around the necks of the teeth. Although this appearance is typical of pyorrhea, yet other conditions may possibly produce a similar picture—for instance, mercurial stomatitis, rachitis, etc.

“Further, the light shadow already mentioned, simply indicates lessened resistance to the X-ray. That is to say, that the ray has penetrated this particular portion of the alveolus with greater facility than in neighboring regions. A shadow of this kind, then, indicates a loss of mineral substance and may signify atrophy, regeneration or actual necrosis of bone. In some instances it is possible for the radiologist, from a study of the density of the shadows, the presence or absence of bone detail, etc., to determine if he is dealing with any one or all of these factors—in many cases, however, this is quite impossible.

“In differentiation, if necrosis or disease begins at the apex of a tooth and is due to infection from the tooth, the area of disturbance is likely to be circumscribed (Fig. 2, Dr. M. L. Collin’s patient, published in *Items of Interest*, June, 1913). On the other hand there are instances where both conditions are seemingly present



RADIOGRAPHS ILLUSTRATING "THE X-RAY AND PYORRHEA."—MACKEE.



(Fig. 3, Dr. H. S. Dunning's patient). Here there is a marked absorption of bone around the apex of the cuspid. The location and appearance of the shadow would lead one to suspect necrosis as a result of an apical abscess. There is, also a marked absorption of bone around the neck of the tooth, which resembles pyorrhea to a marked degree. It will be noticed that the filling extends not quite to the apex; above this point the pulp canal appears to be obliterated. The apex itself is slightly eroded.

"In Fig. 4, is shown an area of absorption apparently in relation to, and possibly originating from, infection through the posterior root of the molar. This shadow connects with the thinned bone left by a previous extraction. The general appearance is somewhat that of pyorrhea. (Patient referred by Dr. H. S. Dunning.)

"Fig. 5 depicts loss of bone in the molar region over a dummy tooth. This, too, has the appearance of pyorrhea, but is possibly due to pressure or local irritation. (Patient referred by Dr. W. A. Hillis.)

"Fig. 6 shows absorption around the apex, root and neck of the tooth. The radiographic appearance is that of pyorrhea, but might it not be the result of an apical abscess with a sinus running along the root of the tooth? (patient referred by Dr. T. P. Hyatt).

"Fig. 7 (Dr. T. P. Hyatt's patient, published in Items of Interest, June, 1913), shows a large cavity in the mandible, apparently involving several teeth and due to an infected cyst.

"The remaining illustrations are presented in order to demonstrate complications that are not infrequently found associated with pyorrhea. They were all published in the Items of Interest for June, 1913: Fig. 8—exostosis; Dr. N. B. Potter's case. Fig. 9—old bicuspid root in situ. Fig. 10—possible pulp stones in molars.

"A study of these few radiographs may convince one of the value of radiography in pyorrhea. It should

demonstrate, also, the fact that the radiologist alone, at least in many cases, is unable to make a diagnosis. Indeed, it is not his duty to make the diagnosis. He should first make a careful and complete radiographic examination and then interpret the radiographs from a radiographic standpoint. He should separate radiographically anatomical from radiographically pathological conditions and he should call attention to photographic, radiographic and other forms of technical artifacts. In other words it is within his province to give a detailed radiographic and other forms of technical artifacts. In perience, skill and a thorough radiographic examination of the patient, together with a careful study of the resulting radiographs. This, together with the clinical findings, will, as a rule, enable the dental surgeon to construct or deduce a diagnosis."

## CHAPTER XXXIV.

### STERILIZATION OF INSTRUMENTS AND PREPARATION OF THE MOUTH FOR SURGICAL WORK.

If there is one thing about which the medical man has cause to laugh at the dentist, it is regarding the dentist's neglect of sterilizing instruments and cleaning the field of operation. The colleges are largely to blame because they do not lay sufficient stress on these subjects and do not require the dental students to practice the proper methods of sterilization in their college course.

The farcical nature of our processes probably does not depend so much on a lack of interest or desire to do the proper thing, as the lack of knowledge along these lines. In ordinary dental work, such as bridge work, crowns, and plates, it may not be of so much importance; but when it comes to such work as prophylaxis and pyorrhea, it is fully as important as in any other surgical work.

Not long ago it was noted that a professor of oral surgery in one of our colleges, in consultation, asked his assistant for a nerve broach, which was handed to him from the regular cabinet stock. He dipped it into alcohol for one second and then proceeded to use it, evidently under the impression that he was using a perfectly sterilized instrument. When a teacher makes such errors as this, is it to be wondered at, that young dentists make mistakes?

The simple dipping of instruments into alcohol is not effective; the sterilizers that are generally furnished the dentists are also inefficient. They put up a good appearance, but further than this they are not worth much. Methods of sterilization are of two kinds, antiseptic and heat. Alcohol in a jar shaped like a fruit jar with a

screw top furnishes a convenient and effective receptacle. The instruments, both before and after the operation, must be thoroughly cleaned in running water with a clean brush, and then placed in the jar just mentioned and allowed to remain there for at least five minutes, when they can be taken out, and dried, or the alcohol burned off by bringing them in contact with a small flame.

Lysol and bichloride solutions are not to be recommended for this particular line of work, because if used strong enough to be effective, the mucous membrane of the mouth would be injured. Undoubtedly, the best form of sterilization yet found is heat. By heat, I do not mean the simple dipping of the instruments into hot water, but the whole instrument must be boiled for at least five minutes. In the summer time, to have a boiling receptacle in our offices, is not the most pleasant companion. However, it will be found to be the best sterilizer; it also gives a good impression and is one of the best advertisements a dentist can have outside of good work. Undoubtedly, dental manufacturers realize this because all sterilizers have the word "sterilizer" written in large letters across the front of the apparatus.

Not only the dentist's instruments and material should be sterilized, but the dentist's hands should be rendered as nearly aseptic as possible. After they have been thoroughly washed with a good grade of soap and a nail brush, a few drops of alcohol should be rubbed into them; this not only destroys the bacteria which may have been received from the previous patient, but makes the approach to the next patient more agreeable. The best way to manage this is by means of a shelf suspended above the wash bowl, on which is placed a fountain bottle as per illustration (No. 51). This is filled with grain alcohol, to which may be added some good toilet water.



## CLEANSING THE FIELD OF OPERATION.

Peroxide of Hydrogen is a good agent to be used in mopping out the mouth. It can be applied by use of a cotton swab held by Skinner's "Kuoris." If it is not desirable to use peroxide, which is unpleasant to say the least of it, we can substitute a solution of aromatic spirits of ammonia, one part in five parts of water. This used as a spray or on a mop is very efficient for cutting loose

*Nasal Douches  
(Preferably of glass)  
mounted just  
above the wash-  
stand containing  
the various  
liquids used  
in Propylæic  
and Pyorrhea.*

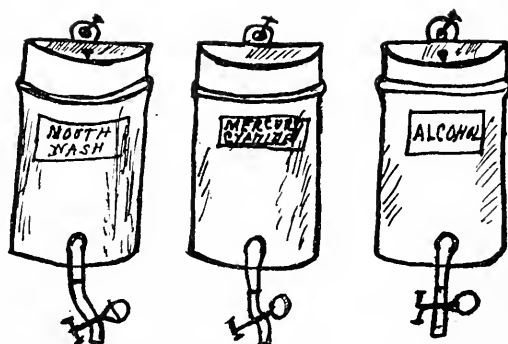


FIG. 51.

the thick mucus covering the inside of the mouth, and at the same time, it is very cooling and pleasant for the patient. Next the gum surfaces and the infected area may be coated with either Buckley's Pyorrhea Astringent, but preferably with Skinner's Disclosing Solution, previously described. The ordinary tincture of iodine is not so pleasant nor does it remain on so long as the Skinner's Disclosing Solution. If the mouth has been thoroughly mopped out, the antiseptic solution applied over all the surfaces, and the debris removed from open cavities which are filled, temporarily, with sandarac varnish and cotton, or with gutta-percha, we have done about all that is possible towards rendering the field of operation sterile.

## CHAPTER XXXV.

### BUSINESS SIDE OF PYORRHEA ALVEOLARIS.

Dental offices have been flooded with all kinds of literature calling attention to certain medicines and preparations which would "positively cure pyorrhea." Many of these preparations were accompanied by extracts from papers by some of the most prominent men in our profession, who claimed that pyorrhea was of constitutional origin, and that such and such a remedy was the only thing to use. Others gave their endorsement to the various local remedies which needed but to be applied several times for a complete cure. These preparations, having come so highly recommended by the profession, were tried out by the dentists, but the cases of pyorrhea on which they were used were not cured. The failure of all these remedies has made the general practitioner very skeptical as to the possibilities of curing pyorrhea, and it is undoubtedly one reason why so few practitioners have undertaken to treat this disease. The business of treating pyorrhea was largely the sale of proprietary drug preparations.

Another reason for lack of interest in pyorrhea treatment was the fact that the dentist did not try, or was not able to secure from the patient the proper remuneration for the work. I have been unable to understand just why this is so, unless it is the failure on the part of the patient to realize the gravity of a beginning pyorrhea. The patient thinks that only his teeth need cleaning and that it is worth probably \$1.00 to do this.

Within the last few years, a number of good men have specialized on either prophylaxis or pyorrhea work and the good work that has been done has forced on the profession the recognition of the fact that pyorrhea work requires the greatest degree of skill and is probably the greatest service that we can render our patients. This

work should command the largest fees that a dentist is able to command. It is a fact that patients of means and refinement are most appreciative and willing to pay large fees to the men who can save their teeth from pyorrhea.

One way is to charge for time, as in other dental work; this plan has serious drawbacks, and it seems to me that it is not the proper idea for surgical work. From the letter of a prominent California dentist, who does considerable work along this line, I give the following:

“I think that ‘so much per hour’ proposition in a professional charge, is not near so satisfactory as a lump sum; it has taken several years for me to fully appreciate that fact. I have frequently stood for the hour plan when patients requested a lump sum, and I have gotten the worst of it, in as much as I could have obtained a larger fee had I mentioned a stated sum, the same as a surgeon would do. In suggesting a fee now, I run through the mouth carefully; size up the worst or bad teeth; calculating in my mind the number at \$15.00 per hour, and then the others in same proportion; and in that way get at a proposition of lump sum, always adding \$25.00, \$50.00 or \$100.00, as the case may be, in case I anticipate the necessity of a compromise.”

My objection to the hour plan in pyorrhea work is that it seems to place our services on the wrong basis—emphasizing the matter of time rather than the results obtained. Also, in case we are interrupted by being called to the phone or to give a few minutes time to someone else, our patient is probably wondering whether or not they are being charged for this time.

A method used by a prominent dentist in New Orleans is to make a charge of \$10.00 for each tooth, irrespective of time required for a complete cure

The system under which the author works is to give the patient an estimate of the entire cost of the operation and treatment before beginning the work. This plan having proved satisfactory and as I have been unable to secure minute data from others, I will give it in detail.

The examination having been concluded, I anticipate the question, "Now, Doctor, how much is this going to cost me?" I at once fill out an estimate sheet; this sheet gives a diagram of the work to be done and the cost of same. There is also a blank space for terms, which is always filled in. At the bottom of this estimate is printed in red, the following notice:

PRESERVE THIS ESTIMATE

The above is only an approximate estimate of services the exact value of which can only be determined after the operations are completed.

The CHARGES therefore will NOT be based upon this estimate, but entirely upon what is done. Any change in work named above or additional operations will be charged at our regular fee.

We do not guarantee any operations.

FIG. 52.

A cheap and efficient means of getting up this estimate is to use the one dollar dental outfit published by the John C. Moore corporation, of Rochester, N. Y., and have a local printer insert at the bottom of page the above notice. A heavy carbon sheet is used between two sheets. The copy is torn out and given to the patient; the original is kept in a loose leaf binder.

If I know the patient to be able to pay a good fee, to whom service is the main consideration, all that is necessary is to write out an estimate sheet and place it in an envelope with the engagement card; this envelope is handed to the patient on his departure.

It has been found by all men who do operative work in either dentistry or general surgery that a deposit in advance is a most satisfactory basis upon which to **work**. I have adopted it as an absolute rule which is explained to the patients, and, since I allow no exceptions to this

rule, no one raises any objection. If questioned at all, I tell them that it is for their own protection as well as mine; that I know they are as good as gold, but that I want their teeth saved, and if I start into it that I am going to do the very best I can towards this end and that I know if they have from \$50.00 to \$100.00 paid in advance they are going to keep coming until the work is done. If they did not do this, the first day after their mouths get comfortable, there would be danger of their not coming back for regular treatment. If they have made the deposit, as I have said, they will keep all appointments as long as you wish.

Sometimes a patient, whom you know to be all right, wishes services, but at the time finds it inconvenient to make a cash payment or to pay within a reasonable length of time. Credits along this line used to be unsatisfactory; at the time of treatment, the results seemed all that I could wish, but such patients would neglect their mouths until Oral Sepsis had again set in, and would declare that they had received no benefit and refuse to pay. This difficulty has now been solved satisfactorily in my practice by a special promissory note. If they are unable to make a cash payment, then I tell them that if they will give me notes and pay eight per cent. for deferred payments, I am perfectly willing to settle the matter up in this way.

This note is good for any kind of dental operations, especially pyorrhea. If it is not met in due time and the patient for any reason refuses to pay same, instead of being humiliated by having to argue the case in court, this note cuts off debate in justice court and a judgment is immediately given to the dentist. It is a bad proposition to work for people who cannot pay, but this note is the best solution of the problem that I have been able to obtain.

If I were going to have any kind of operation performed, I certainly would want to know just exactly what it is going to cost me, and I believe in treating the

patients with that fairness which I would ask under the same circumstances.

There was a difficulty which used to present itself to me before I started to keeping copies of the estimates. The patients, after an examination, were told about what the work would cost them. They did not have the work done at that time, but would come in again, probably, at the end of three or four months. After another

\$.....	Atlanta, Ga.,.....	19....
.....	.....day of.....	next.
.....	.....promise to pay Dr. ....	.....
.....	.....Dollars, with interest	
from date, at eight per cent. per annum, and reasonable		
charges, not less than ten per cent. for Attorney's fees, if		
any should be incurred in the collection thereof, and hereby		
waiving all homestead and exemption rights, for value		
received.		
<p><i>and</i> This note is given for professional services already rendered, and I acknowledge that it is unconditional and binding and that no defence whatever can be set up against its collection.</p>		
<p>Witness our hands and seals</p>		
.....	.....	[L. S.]
.....	.....	[L. S.]
.....	.....	[L. S.]
No.....		
RESIDENCE.....		

FIG. 53. A GOOD NOTE FOR A PROFESSIONAL MAN.

examination I would again tell them what the charges would be. The patient, having forgotten, would say that I had promised to do it \$20.00 or \$30.00 cheaper at the time I made the first examination. Now, with my present system, I can refer to my files and can convince him immediately of his mistake. Previously, when other work was done in addition to the work estimated on, the

patient, when settling the bill, could not be made to understand that more work had been done, and they would not think it right that any additions should be made to the estimate as first named. My system settles this question and there is never any objection, as the estimate suggests and puts the patients on notice that other work may be discovered and will be charged for.

For instance, in making a bridge abutment, if the tooth that I hoped to use as an abutment could not be saved, then I would have to drop back and make the bridge more extensive; they often thought that the charge should be the same.

The greatest difficulty that I have had is with the question, "Now, doctor, do you guarantee the operation?" I became so tired of hearing this that I inserted at the bottom of the estimate sheet, "We do not Guarantee any Operations." This immediately settles all questions, and if the patient is not willing to trust himself to my reputation and skill, he is at liberty to go somewhere where a "cure is guaranteed."

This is well answered by Dr. R. G. Hutchinson, Jr., who says:

"A cure does not guarantee immunity and a true recurrence in no way invalidates a cure."

I find that the terms "scaling the teeth," "removing tarter," and "treatment of the gums," do not impress the patients with the seriousness of pyorrhea treatment. There is a fad among people for "operations," and if the dentist calls it by this name, which is really the proper term, our patients like it much better and are willing to pay satisfactory fees for it. I find it better to do as much of the work on the first day of the engagement as possible—enough to at least verify myself in calling it an "operation." In addition to this business reason, I get better results as described in the chapter on "Treatment."

I do not care to do more than two or three Pyorrhea

operations in one day, and if I finish one half the work for each patient, giving each two to three hours, I feel that I have done enough.

In pyorrhea work the use of a proper system in our business dealings with patients should not detract from our professional dignity and the returns will be such that we can have more vacations, more recreation, and more time with our families.



## CHAPTER XXXVI.

### THE MEDICAL AND SURGICAL ASPECT OF ORAL HYGIENE AND PYORRHEA.

VIEWS OF PROMINENT MEDICAL MEN.—SUGGESTIONS TO  
PHYSICIANS AS TO CARE OF THE MOUTH IN SICKNESS.—  
ORAL PREPARATION FOR SURGICAL WORK.

Dr. C. H. Mayo recently read a paper (Jan. 31, 1913) in Chicago, in which he made the following statement: "It is evident that the next great step in medical progress in line of preventive medicine should be made by the dentists."

The facts about oral hygiene, oral sepsis and pyorrhea alveolaris, are of vast importance to the physician, as well as to the dentist. In many cases they are of vital importance and yet comparatively little has been written on the subject.

It should be the aim of all well informed dentists to instruct all their patients who are nurses and physicians, as to the importance of this neglected field of their work. Such instruction, if put into practice, would undoubtedly help any physician not only to give comfort to the sick, but a quicker restoration to health.

Every dentist is familiar with the great amount of decay and oral sepsis frequently seen in convalescent patients who, previous to their illness, possessed a normal mouth. On inquiry, we sometimes learn that during sickness these mouths received the usual care as given in hospitals.

In other cases when a person becomes sick he often neglects the little attention formerly given the mouth. Vigorous chewing is dispensed with, exercise of the muscles of mastication ceases, aeration of the mouth is lessened, with the result that all self-cleansing processes are diminished and the saliva becomes thick and

ropy. The mouths of the sick are often a hot bed of filth and disease, as indicated by the foul breath, and are a most prolific breeding place for the bacteria of pneumonia, diphtheria, tuberculosis and other diseases.

Physicians should be told by the dentists that conditions such as the above can be changed for the better. The time will come when the physician will realize the necessity of giving directions for the care of the mouth as a routine procedure in every case of sickness. At the present time the nurse is supposed to attend to the patient's mouth, but most of them are woefully ignorant on the subject and the patient suffers thereby.

When a physician refers a patient under treatment to a dentist, the latter should not be content to limit his work to fillings, crowns and bridges, but should recognize any diseased condition of the gums and should report the findings. This kind of service will often prove of vast importance in the etiology, diagnosis and treatment of systemic disturbances. The discovery of oral sepsis in a patient's mouth is of far more importance to the patient, the dentist and the physician than the filling of teeth. This view of the matter was expressed by Dr. William Hunter, physician and lecturer on pathology, to the Charing Cross Hospital, of London, in his famous classic upon the subject of "Oral Sepsis."

"One would think poorly of a surgeon or doctor who declined to take the responsibility of treating a follicular (that is, a "septic") tonsillitis, but insisted on handing over the case to a throat specialist, or who allowed a patient to suck continuously a number of septic sores on his finger. I think no less poorly of any doctor or surgeon who declines to make himself responsible for the treatment of much of the oral sepsis presented by many of his cases. For this is what patients are constantly doing. Wherein consists the pathological difference between a follicular tonsillitis and a foul, septic, suppurating condition of the gums, with deposition of calcareous "crusts and scabs" (so-called tartar) covering and hiding septic wounds and ulcers, loaded, as microscopic examination shows, with staphylococci and streptococci? None whatever, except that the latter is exceedingly common and the tonsillitis is comparatively rare. The pathological condition in both is the same; namely, sepsis. Moreover, it is a sepsis as easily

recognized and much of it as easily removed in the case of the one as in that of the other, and the more urgently requiring to be removed, since *it is more important as a potential disease factor than any other source of sepsis in the body.* . . . .

"The chief feature of this particular oral sepsis is that the whole of it is swallowed or absorbed into the lymphatics and blood. Unlike the sepsis of open wounds on the outside of the body, none of it is got rid of by free discharge on the surface. The effects of it, therefore, fall in the first place upon the whole of the alimentary tract from the tonsils downward. These effects include every degree and variety of tonsillitis and pharyngitis; of gastric trouble, from functional dyspepsia up to gastritis and gastric ulcer, and of every degree and variety of enteritis and colitis and troubles in adjacent parts, *e. g.*, appendicitis. The effects fall in the second place upon the glands (adenitis); on the blood (septic anemia, purpura, fever, septicemia); on the joints (arthritis); on the kidneys (nephritis), and on the nervous system. . . .

"The following cases show to what extent oral sepsis complicates specific fevers, such as scarlet fever, typhoid, diphtheria, and the striking benefits to be got from its removal.

"In 648 cases of scarlet fever admitted to the London Fever Hospital under my care in the four years 1904-7, the incidence of oral sepsis, carefully noted by myself, varied from 25 per cent. to 43 per cent. The effect of oral antiseptics (the removal, as far as possible, immediately on admission, of every trace of oral sepsis around the patient's teeth and gums, by daily swabbing with 1-40 carbolic acid solution) throughout the earlier part of the disease was very striking. The chief complications of the disease were reduced as follows: The incidence of secondary adenitis was reduced from 6 per cent. in 1904 to 3.3 per cent. in 1906 and 1.8 in 1907; of cellulitis of the neck from 5.2 per cent. in 1904 to 2.8 per cent. in 1906 and nil in 1907; of glandular suppuration from 1.7 per cent. in 1904 to 0.5 in 1906 and nil in 1907. The striking improvement was due to the increasing care taken by myself and by my residents and nurses under my instructions. In only one or two cases out of the whole series were any teeth extracted.

"What are the general principles of the treatment applicable to medical sepsis? The first and most important is curiosity about and careful observation of the actual character and degree of the septic foci present in the mouth (naso-pharynx or elsewhere) in every case of medical disease. This observation cannot be made by a cursory glance into the mouth and a general conclusion to the effect that the 'teeth are fairly good,' or the mouth 'fairly clean,' or that the mouth 'requires to be seen to.' If you look closely into the mouth of your patients and note what you see, you will observe every degree and variety of septic ulceration; every degree of tartar deposit, as a great effect of these septic inflammation and ulceration; every degree of sup-

purative inflammation of the gums; every degree and effect of septic periostitis and periodontitis, with formation of pockets and loosening of teeth; every degree and effect of septic osteitis—*e. g.*, rarefying osteitis, causing recession of the bone socket of formative osteitis, causing thickening of alveolus; every degree and variety of septic caries and necrosis of the teeth, and as a result of all these conditions, singly or combined; every degree and variety of septic stomatitis, simple, ulcerative, gangrenous. You will see all this in infinitely less time than it takes to examine a specimen of the gastric contents, or of the feces, or of the urine, or of the sputum; in far less time and with far less labor than it will take you to examine the nose, or the naso-pharynx or the larynx; in far less time than it takes you to examine the heart or the liver, or, indeed, any other organ of the body. In particular cases you will observe that all these septic conditions are produced or intensely aggravated by toothplates covering necrosed roots; by amalgam and gold fillings which have become septic; by porcelain crowns with gold collars; which, however good to begin with, are never really aseptic, and are liable to become extremely septic. All these you can observe in a few minutes if you look for them—in less time almost than it takes to mention them.”

Several other interesting and authoritative quotations are appended:

“There is little doubt in my mind that bad mouth-hygiene favors the development of pneumonia by paving the way for pneumococcus sinusitis, which, as pointed out, frequently antedates a true pneumococcus infection. Any inflammation of the nasal sinuses should therefore be promptly treated.”—Harvey G. Beek, M. D. (*Interstate Med. Jour.*)

“Bad teeth are an enormous factor in the development of catarrhs. Many a chronic catarrh is kept up for this reason alone.”—John B. Huber, M. D. (*New York Med. Jour.*).

“The important part of scarlet fever is a focus of infection located either in the nose, in the mouth, or in the nasal pharynx, and from these sources the poisons are circulated through the body. Thus the poisons are but giving expression to themselves in the eruption that has been held heretofore to be of such consequence.

“The importance of diphtheria I am sure is fully understood, but the enlargements of the glands of the neck, of the nose, of the tonsils, and of the pharynx are due to absorption somewhere in the nose or in the mouth, a very large percentage of which takes place through cavities in the teeth or down the sides of unclean teeth. Not only that, but we are constantly confronted with instances like his, a child has been in a diphtheria hospital and has remained there until it seemed safe for the child to go home. Then the child has gone home, and there has

followed an infection with diphtheria in that home. What is the logical explanation? The logical explanation is that in some hidden recess, somewhere in that child, there was a focus of hidden bacteria; and that in all human probability a large percentage, if not an overshadowing percentage, of those infections are either in the tooth cavities or somewhere in close connection with the tooth cavities."—Dr. W. A. Evans, M. D.

In typhoid fever and allied conditions, the mouth is a veritable hot-bed of the very infection we most want to control. Just think of your patient having 28 to 30 square inches of infected surface feeding the diseased intestine and no attention being given it. I have proven to my own satisfaction that all cases of fever are more easily cured and have fewer complications when the mouth is maintained in a hygienic condition, before and during illness.

Frankel, Wachselbaum, and Miller agree that the most frequent excitant cause of pneumonia is infection from the mouth. Miller says, "The oral cavity serves as a gathering point for this infection, which from time to time is carried into the lungs with the air, until at last at some weak point, or as the result of some inflammatory action of the lungs, through which the power of resistance is impaired, it obtains a foothold in the lungs. For this reason, therefore, and very many others, the neglected oral cavity offers a dangerous cover of infection, which by no means received the attention it deserves."

Numerous investigators have pointed at the tonsil as a possible point of entry of rheumatoid infection. Billings reports cases of multiple arthritis cured by enucleation of the tonsils; also, several cases of arthritis deformans and parenchymatous nephritis due to infection of streptococci planted in pyorrheal pockets.

Dr. A. H. Stevenson, in a letter writes me:

"It is generally believed that the bacteria of the common infections, viz.: diphtheria, pneumonia, scarlet fever, and typhoid invaded the body through the air

passages, but Jonathan Wright and other investigators find that the turbinate bones of the nose, and the ciliated epithelium covering the mucous membrane of the nose, act as sieves or screens, preventing most bacteria from entering the throat, bronchi, or lungs by this route. The mouth, therefore, must be the chief means of these infections reaching the lungs or stomach. The function of the stomach may be impaired by this bacterial invasion. The hydrochloric acid, Nature's great germicide, is able to overcome the bacterial attack that occurs with the normal acquiring of food, but the constant ingestion of pyogenic material from a septic mouth seriously interferes with, and may prevent the normal secretion of the hydrochloric acid. This may result in the subsequent disturbance of the process of digestion.

"With a wound on the surface of the body, the bacteria and their toxins are eliminated with the surface discharge, but where there is a lesion of the mouth, an alveola abscess, for example, the septic material is swallowed or disposed of by the lymphatics or the blood. If the resistance of the tissues is high, and the individual in excellent health, this daily toxic dose may be taken care of, but the effect falls upon the entire alimentary tract. Dr. E. C. Kirk calls this the "toxic habit," and like all offensive habits it becomes apparent to others before it does to the afflicted. Other results showing the results of oral sepsis could be continued "ad finem." The increase of papers on this subject appearing in the medical journals is encouraging."

In my experience in hospital work I have found that the majority of patients do not receive treatment for mouth conditions. The time-honored method of using a strip of gauze on the finger is better than nothing, but on account of the shape of the teeth a considerable amount of infectious debris is packed between the teeth and into the depressions around the tongue.

If the mouth is first examined in office practice and found to need attention, the physician should send the

patient to that dentist whom he has reason to know will put it in a hygienic condition, and instruct the patient in oral hygiene.

If the patient is confined to bed, we know from experience, that those who ordinarily brush the teeth often neglect this duty.

Whose duty is it to brush the teeth of the sick patient? The physician should be able to demonstrate to some member of the family, or if a nurse be in attendance, instruct her how to use the brush and mouth wash. I have never seen a nurse who knew how to brush her own teeth; therefore I give her implicit instructions as to the proper manner of brushing not only the teeth, but the whole mouth, including the tongue. I hope the day is not far distant when every training school for nurses will incorporate a few lectures on this subject in their course.

The teeth of a bed-ridden patient, even if in normal condition, should be washed properly several times each day and rinsed every few hours with some cleansing solution. The most serious consequence of tooth decay, following sickness, is due to the infection between the teeth. The use of gauze will not remove the material. The tooth brush is a necessity. It goes between teeth, it removes the accumulation as gauze cannot. The texture of the brush should be of the softest grade obtainable. Some good tooth paste should be used in preference to a powder; a powder must be changed into a paste in the mouth before it becomes efficient; before it changes to a paste, some of it gets lodged between the teeth, where it stays; some of it is apt to be inhaled, irritating the throat and lungs. A paste does the work quicker and has the advantage that it generally contains some antiseptic. This must be followed by a mouth wash, and for this purpose lime water or salt water will answer, but a prescription of chlorate of potash, with a few drops of phenol is efficient for the purpose of cleansing and disinfecting.

Even though a patient cannot raise his head, oral cleanliness must not be neglected. Here it is good practice to irrigate the teeth and mouth by turning the head to one side, having the patient draw the fluid into the mouth through a long glass tube, and instructing him to close the lips and force the fluid between the interspaces of the teeth, flushing the whole oral cavity and the throat. In other cases, the ordinary long-spout feeding-cup can be used without the patient moving the head. By closing the lips over the spout, this cleansing liquid can be drawn into the mouth and later emptied back into the cup just as it was received. In other cases, it is advisable to use the fountain syringe and flush out the mouth just as you would any other infectious cavity. Use a nozzle that will give a fine stream and don't be afraid to use plenty of pressure.

If oral sepsis is present, in addition to the cleansing it is necessary to make a topical application of some formulae as Skinner's Disclosing Solution, Buckley's Pyorrhea Astringent, or AA Pyorrhea Treatment (formulae given elsewhere), or some similar preparation containing iodine, which drug alone will penetrate in the mouth.

Proper attention to the mouths of the sick and before operations by the surgeon will undoubtedly be productive of comfort to the patient preventing infections and will prove one of the greatest aids that can be used to restore the health of the patient.

#### ORAL PREPARATION FOR SURGICAL WORK.

If there is one place where the dentist can be of great help to the general surgeon, it is in the preparation of the mouth before the anesthetic is given for all operations. The surgeon wears a mask, and is all attention to every detail, but often neglects a great source of infection and danger—the mouth. Dentists should urge the strengthening of this chain in aseptic surgery. No



doubt many of the post-operative pneumonias are due to infection from septic mouths containing pneumococci. In this regard we must teach our physician friends not to rely on rinsing the patient's mouth with the ordinary solutions used as mouth washes. Undoubtedly, it would be safer for the patients if their mouths could be cleaned by a staff hospital dentist, and the day is not far distant when just as much attention will be given the mouth in hospital wards as is now accorded examinations of the heart, lungs or kidneys.

The above should serve to give a glimpse into the many important and practical relations between medicine and dentistry. The solution of such problems requires knowledge on the part of the dentist and full recognition of the importance of mouth hygiene on the part of the medical profession.





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